OCCUPATIONAL HAZARDS

AUGUST 1950

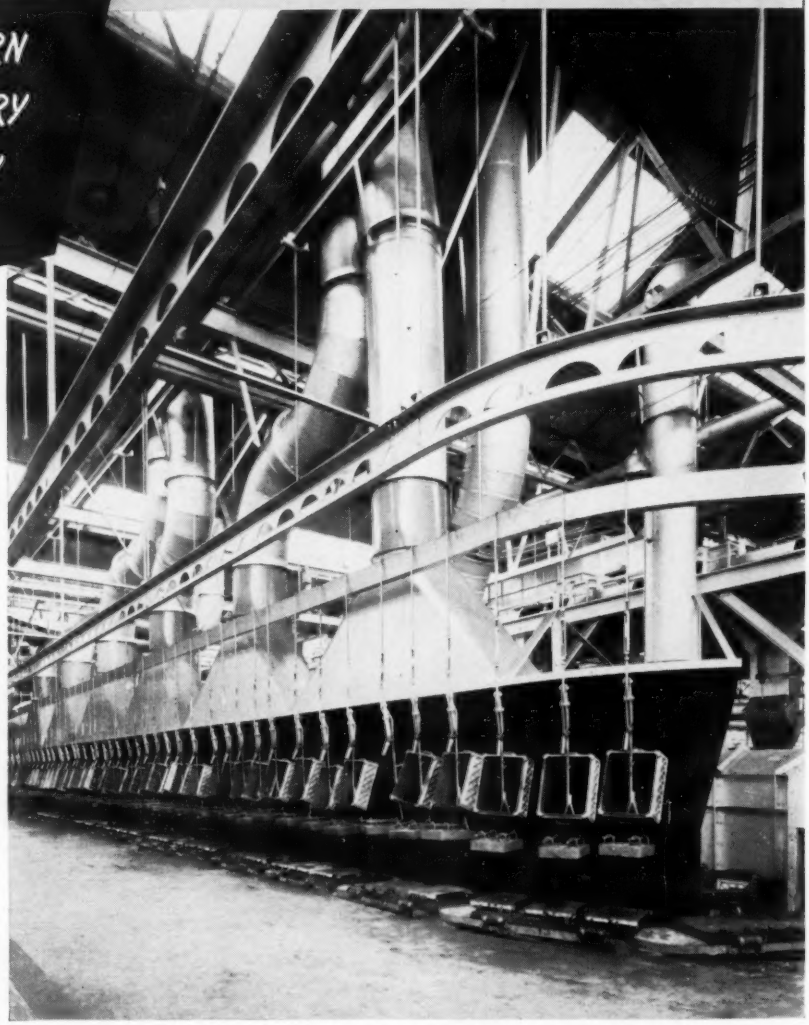
AN ACCIDENT ABOUT TO HAPPEN ↑ SEE PAGE 24

IN THIS ISSUE:

HOW TO SELECT A DUST COLLECTOR
REMEDIES FOR MACHINERY HAZARDS
PREVENTION OF HAND INJURIES

Smoke and Fumes GONE WITH THE WIND

...IN THIS MODERN SOUTHERN FOUNDRY INSTALLATION BY KIRK & BLUM



WHEN hot metal meets moulding sand, there's bound to be smoke and fumes. But there's no need for smoke and fumes to contaminate the air in a modern well-ventilated foundry. At the pouring station in one of the south's new gray iron and steel foundries, smoke and fumes are not a problem.

All piping is installed in accordance with A. F. A. specifications. All sections are joined by gasketed companion angle rings, with conveniently located clean-out doors.

This modern smoke and fume control system was fabricated and installed by Liberty Engineering and Mfg. Co., a division of Kirk & Blum. For any foundry dust, fume, smoke or ventilation need, consult KIRK & BLUM, an organization of engineers and craftsmen . . . experienced in design, fabrication and installation of complete systems. For detailed literature and information write The Kirk & Blum Mfg. Co.,2802 Spring Grove Ave., Cincinnati 25, Ohio.

FOR CLEAN AIR...THE INVISIBLE TOOL

KIRK AND BLUM

DUST & FUME CONTROL SYSTEMS

AO PANORAM Goggles

Now...For Extra Comfort...AO Panoram Goggles with All-Rubber Cushions

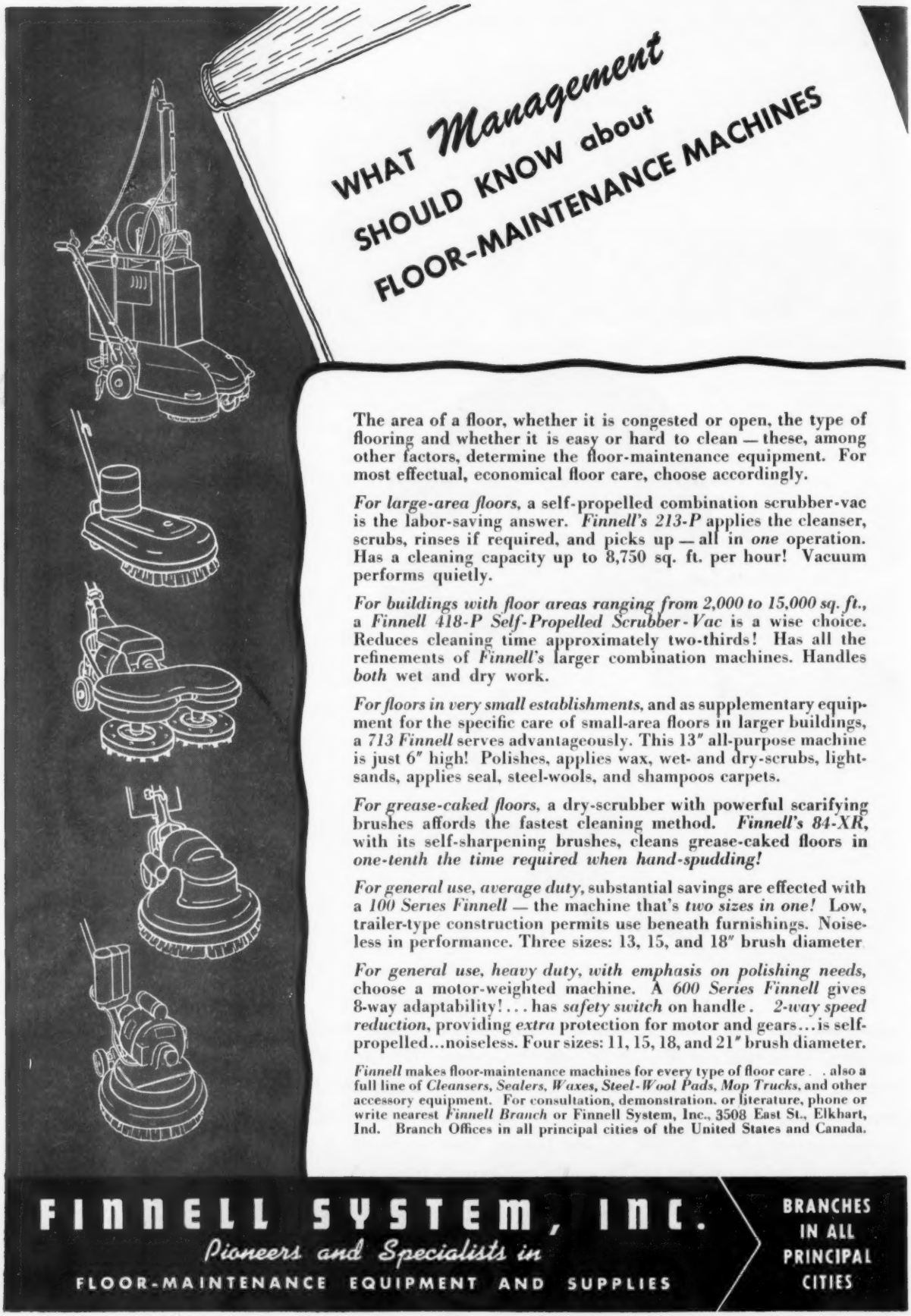
Long popular with workers because of its exceptional wide angle vision and lightweight frame, this plastic safety goggle now provides additional protection as well as comfort for those whose work requires constant wearing over extended periods. The cushions of soft, pliable, non-toxic neoprene sponge rubber eliminate any possibility of flying particles entering from the side, top and bottom. They are molded to the shape of the eyecup and can be snugly and securely fitted without stapling, cementing or sewing. Replacement is simple and easy. Your nearest AO Safety Representative can supply you.

Other Panoram Goggle Features

Replaceable lenses in clear or green acetate • frames conform closely to face and forehead • bridge fits any nose without pressure • vented eyecups reduce lens fogging • elastic headband assures close fit.

American Optical
SAFETY PRODUCTS DIVISION

Southbridge, Massachusetts • Branches in Principal Cities



WHAT *Management* SHOULD KNOW about FLOOR-MAINTENANCE MACHINES

The area of a floor, whether it is congested or open, the type of flooring and whether it is easy or hard to clean — these, among other factors, determine the floor-maintenance equipment. For most effectual, economical floor care, choose accordingly.

For large-area floors, a self-propelled combination scrubber-vac is the labor-saving answer. *Finnell's 213-P* applies the cleanser, scrubs, rinses if required, and picks up — all in *one* operation. Has a cleaning capacity up to 8,750 sq. ft. per hour! Vacuum performs quietly.

For buildings with floor areas ranging from 2,000 to 15,000 sq. ft., a *Finnell 418-P Self-Propelled Scrubber-Vac* is a wise choice. Reduces cleaning time approximately two-thirds! Has all the refinements of *Finnell's* larger combination machines. Handles *both* wet and dry work.

For floors in very small establishments, and as supplementary equipment for the specific care of small-area floors in larger buildings, a *713 Finnell* serves advantageously. This 13″ all-purpose machine is just 6″ high! Polishes, applies wax, wet- and dry-scrubs, light-sands, applies seal, steel-wools, and shampoos carpets.

For grease-caked floors, a dry-scrubber with powerful scarifying brushes affords the fastest cleaning method. *Finnell's 84-XR,* with its self-sharpening brushes, cleans grease-caked floors in *one-tenth the time required when hand-spudding!*

For general use, average duty, substantial savings are effected with a *100 Series Finnell* — the machine that's *two sizes in one!* Low, trailer-type construction permits use beneath furnishings. Noiseless in performance. Three sizes: 13, 15, and 18″ brush diameter.

For general use, heavy duty, with emphasis on polishing needs, choose a motor-weighted machine. A *600 Series Finnell* gives 8-way adaptability!... has *safety switch* on handle. *2-way speed reduction,* providing *extra* protection for motor and gears... is self-propelled...noiseless. Four sizes: 11, 15, 18, and 21″ brush diameter.

Finnell makes floor-maintenance machines for every type of floor care . . also a full line of *Cleansers, Sealers, Waxes, Steel-Wool Pads, Mop Trucks,* and other accessory equipment. For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 3508 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Pioneers and Specialists in

FLOOR-MAINTENANCE EQUIPMENT AND SUPPLIES

BRANCHES IN ALL PRINCIPAL CITIES

"THERE'S PROFIT IN PREVENTION"

OCCUPATIONAL HAZARDS

Volume 12 • No. 10

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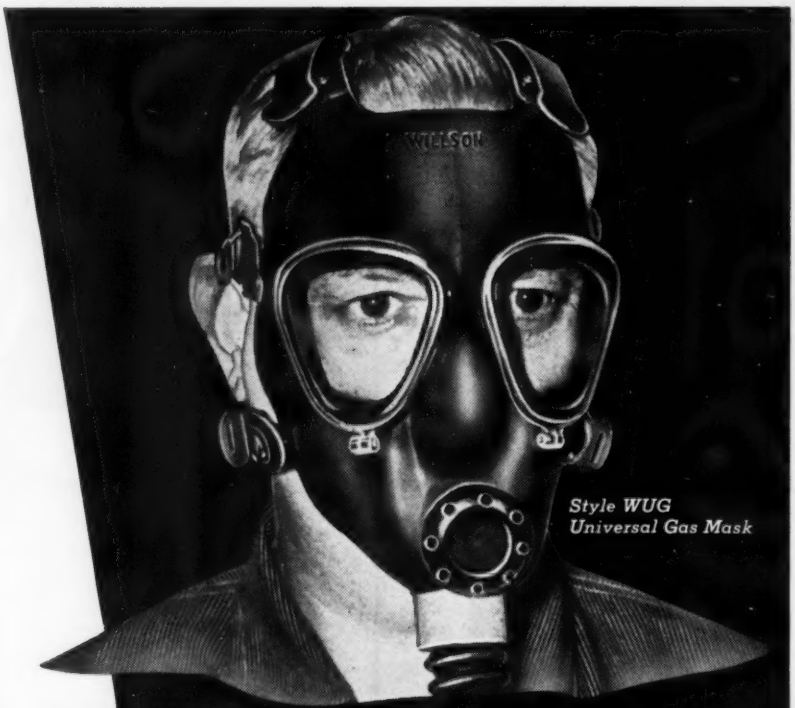

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They have been designed with every consideration for worker safety and comfort. A selector table and complete information on various types is included in our new catalog. Ask our nearest distributor for a copy —or write direct to WILLSON PRODUCTS, INC., 209 Washington Street, Reading, Pa.

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Style WIG
Industrial Gas Mask

Style WTG
Tank Gaugers' Mask

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Bad weather ahead!
it's time for BOOTS

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8" Brown Veal, full double leather sole, leather heel.

Where can you find as wide a selection as HY-TEST'S?

WRITE FOR CATALOG

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8" Brown Glove, leather midsole, cord outsole and heel.

H753-5
8" Brown Glove, full double leather sole, leather heel.

H754-2
8" Brown Glove, leather midsole, neocord outsole and heel.

H755-1
8" Rosite, full double leather sole, leather heel.

H796
8" Rosite leather midsole, rosite outsole and heel.

H799-1
10" Black Retan, neocord sole and heel.

H797
8" Brown Glove, leather midsole, neocord outsole and heel.

H798
8" Rosite, leather and composition triple sole, rubber top piece heel.

H756-1
10" Black Retan, leather midsole, composition outsole, rubber heel.

H691
10" Brown Retan, leather midsole, composition outsole, rubber heel.

H757
16" Rosite, double leather sole, leather heel.

. . . Insure Workers' Feet in Sure Protection

with HY-TEST ANCHOR FLANGE SAFETY SHOES

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THE WORLD'S LARGEST SELLING SAFETY SHOE

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NOW! AN IMPORTANT and EXCLUSIVE NEW IMPROVEMENT IN FIRE EXTINGUISHERS

BUFFALO better-built

VL FIRE EXTINGUISHERS with

DRYEX THE AMAZING NEW DRYING AGENT!

1-qt. VL Fire Extinguisher containing DRYEX

Also available in 1½-qt., 1-gal. and 2-gal. sizes

Long proved for its speed and effectiveness in fighting fires of electric origin, also against fires in oils, gasoline, paint, greases and other flammable liquids, the Buffalo *better-built* VL Fire Extinguisher is now more dependable than ever! Each VL Extinguisher now contains DRYEX, the exclusive new drying agent that removes all traces of moisture, prevents corrosion and rust, insures continuous accuracy of performance and adds many years to the dependable life of the extinguisher.

WRITE US for full information on **DRYEX** and name of your nearest Buffalo distributor.

BUFFALO FIRE APPLIANCE CORPORATION
DAYTON 1, OHIO

Established 1895

LETTERS TO THE EDITOR

Resuscitation Method

Editor,

I notice in O.H. for May that a new manual method of artificial respiration has been introduced. Having about 20 years' experience with many methods . . . I debate whether this new method as listed and shown will better the Schaefer prone-pressure method . . . The question uppermost in my mind is how long would Mr. Emerson's method be kept up by an individual who is . . . the sole person available for resuscitation. From the short descriptive material and three pictures shown, it would seem . . . to be unusually tiring.

No doubt it has many advantages, but is it being used by any organization or life-saving groups at water fronts?

A. R. Sutton
Assistant Mgr.
Quaker Oats Co.
Pekin, Illinois

Training Fire Brigades

Editor,

(Regarding) an article in June, 1950, on the training of plant fire brigades: near the end of the article it recommends a suitable handbook published by the National Fire Protection Association. Would you send me the address of the NFPA.

J. W. Prutsman
Safety Director
Los Angeles Transit Lines
Los Angeles, Calif.

• *The NFPA is located at 60 Batterymarch St., Boston 10, Mass.*

Elevator Code

Editor,

Our letter requesting a copy of the standard recommended elevator code, addressed to the National Elevator Manufacturers Industry, as mentioned in the June issue of your magazine, was returned to us. We would appreciate it if you would send us the correct address.

Earl R. Goldsworth
Safety Dept.
Gates Rubber Co.
Denver, Colorado

• *The National Elevator Manufacturers Industry is listed at 107 Park Avenue, New York City.*

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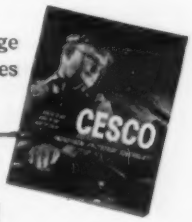
NOW AVAILABLE in 2 Eye Sizes...

42 x 45 mm and **45 x 48 mm**

LOOK at these exceptional features

- Recommended for eye safety where frontal protection is required and wherever non-metallic, non-sparking equipment must be used.
- Frames made of non-flammable, durable plastic.
- Attractive appearance—with all the smartness and styling of personal glasses.
- Really comfortable to wear—new, improved nose bridge provides considerably greater bearing surface, eliminating spot pressure on the nose. Goggle is light in weight; temples fit snugly yet gently over the ears.
- Correct fit—choice of narrow, medium or wide bridge widths. Flexible cable temples curved to hold spectacles in correct position at all times.



Be sure to have a copy of the latest CESCO Catalog!

For complete information about Cesco's newest safety spectacles, ask your Cesco distributor or write...

CHICAGO EYE SHIELD CO. • 2308 Warren Boulevard • Chicago 12, Illinois

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OFFICES IN: Atlanta, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Columbus, Detroit, East Orange, Houston, Los Angeles, Montreal, Philadelphia, Pittsburgh, Seattle, St. Louis, St. Paul, Toledo, Tulsa

Prove to yourself that absorbent
WYANDOTTE ZORBALL TRACKS LESS

Make two piles of floor absorbent. One of Wyandotte Zorball . . . the other of any competitive absorbent. Step on one pile and walk away. Then step on the other pile and walk away.

You'll find Wyandotte Zorball will not track any more than three steps. But the competitive absorbent will track from 20 to 30 steps.

Make this test yourself. Or ask your Wyandotte Representative or Supplier to demonstrate.

Wyandotte Zorball

- *Tracks less*
- *Will not break down readily*
- *Will not become muddy when wet*
- *Holds water and oil longer*
- *Picks up more for less*
- *Will not burn*

THE WYANDOTTE LINE

—all-purpose floor absorbent: Zorball; ***floor wax:*** Anti-Slip Wax; ***germicides:*** Steri-Chlor, Spartec; ***maintenance cleaners:*** Detergent, F-100, El-Bee, Paydet; ***detergent-sanitizers:*** Tri-Bac, Kromet—**in fact, specialized products for every cleaning need.**

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THE BOOK SHELF

New publications to keep you up to date on safety developments. The publishers will provide further information on each.

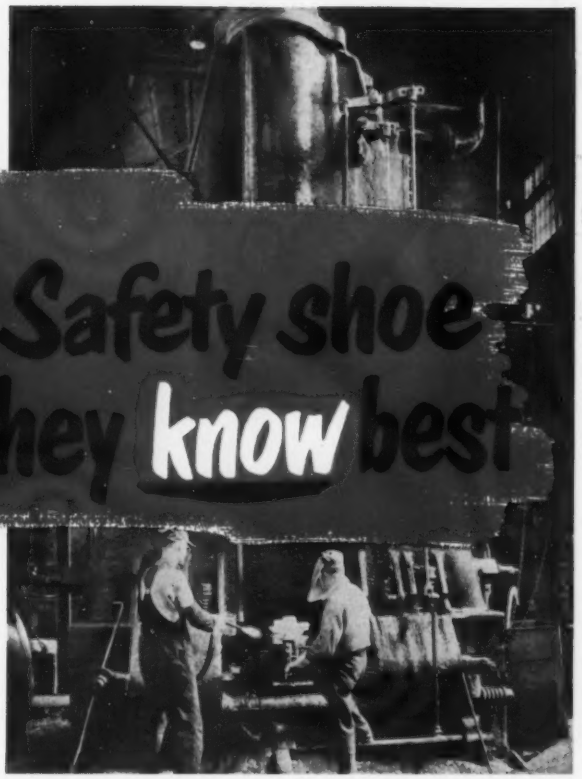
Safety In Factories, (International Labour Office, 1825 Jefferson Place, N.W., Washington, D. C. 1950: $8.50, 1701 pp.) A summary of the laws and organizations for factory safety in 14 countries. Both governmental and private organizations are listed, and their activities described, in order to give an outline of the safe practices foundation in the countries studied. The laws analysed are mainly concerned with worker safety, omitting plant sanitation and specific poisons. For various safety installations and requirements, however, the coverage is quite complete.

Hydrogen Sulfide, Safety data sheet SD-36, (Mfg. Chemists' Association. 1950: 20c.) Covers safe handling practices of hydrogen sulfide in transit and in laboratory or plant use. Information is given on recommended containers and personal protective equipment, as is data on incidental health hazards and their control.

Air Pollution Control, (Industrial Hygiene Foundation, 440 Fifth Avenue, Pittsburgh 13. 1950: $2.00.) A handbook of helps in air pollution control. The book includes, among other papers, one by W. F. Davidson, which reduces to engineering terms the various theories on smoke and dust dispersal in relation to stack heights, building location, temperature, etc. Also included are comments on the Donora Smog, and lessons learned from it. Other subjects treated are: assessing smog hazards in narrow valleys, chemistry of smog, behavior of smoke from stacks.

Unloading Liquid Caustic From Tank Cars, Manual sheet TC-3, (Mfg. Chemists' Association, 246 Woodward Bldg., Washington, D. C. 1950: 20c.) A completely rewritten manual containing the best known recommended procedures and safety precautions for handling shipments of caustic soda and potash.

More than half a million men draw pay checks in the steel industry. And as in any big group of Americans, more of these men wear Thom McAn than any other shoe.



Men want the Safety shoe with the name they know best

#S-4371 — The increasingly popular moccasin style toe. Rich brown color. Oil resistant sole and heel. Here are combined good looks and long wear.

Why do men wear Thom McAn Safety Shoes so *willingly?* Because they know the name and the reputation it stands for. Because they have made Thom McAn America's No. 1 shoe brand by *choice*—for good looks, all-day foot comfort, more mileage for the money. *Naturally* they turn to Thom McAn for protection, too. They *want* to wear Thom McAns—and they *keep* wearing them. All the reason in the world why you should make Thom McAn Safety Shoes available to your men—and help keep safety records *safe.*

SOLD 2 WAYS

1. Stocked for your men in Thom McAn stores.
2. Sold direct to plants.

Details of this service, plus information on the 4-way employee purchase plan, and the Thom McAn safety shoe features, should all be on your desk. Just write us and we'll see that they get there.

THOM McAN SAFETY SHOE DIVISION
25 West 43rd Street, New York 18, N. Y.

Thom McAn
SAFETY SHOES

A DIVISION OF MELVILLE SHOE CORPORATION

NEO CORK SOLES

This sole is proving its worth under the toughest conditions. Pure DuPont Neoprene makes the Neo-Cork sole proof against oil, grease, gasoline and caustics. The high percentage of cork forms thousands of suction cups that keep the feet from slipping. Cork waterproofs the sole, cushions the feet against rough, hard surfaces and gives the sole its long wearing quality. NEO-CORK soles will not pick up metal chips.

GRO-CORD RUBBER CO. • LIMA, OHIO

GRO-CORD RUBBER CO. OF CANADA LTD. • TILLSONBURG, ONTARIO

Mr. Safety Engineer!

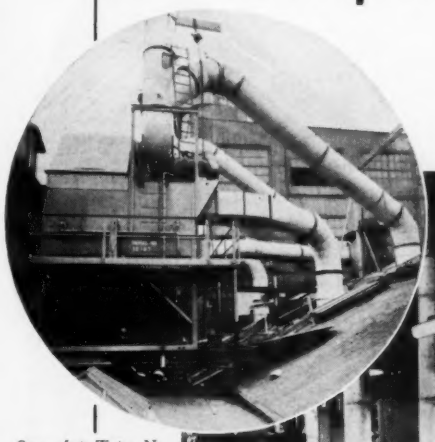
Do you have working conditions that are raising hell with shoe soles? If so, let us hear from you. We will cooperate with you in researching the problems, at no cost to your company. We feel that a general lack of technical knowledge concerning the proper sole for an individual job is cutting efficiency and increasing the chances of injury. Once we have performance records on soles of all types, we can be of real service to industry.

NEO CORD SOLES — Proof against oil, grease, gasoline, caustics and acid. Gives very long, slip resistant wear.

TRADE GRO CORD MARK — CORD-ON-END — Cord-on-End construction makes this sole very slip resistant and long wearing.

GRO CORK SOLES — Slip resistant, weather proof, long wearing, won't pick up metal chips, cushions the foot.

Workers get clean faces, employer lowers fuel bills with ROTO-CLONE



One of 8 Type N Roto-Clones serving buffing room. Unit mounted on roof to conserve space.

Partial View of buffing room

THIS large buffing room of a Bridgeport, Conn. manufacturer processes over 850 varied products of different shapes. Equipment includes dial buffers, arbor buffers, buffing lathes and polishing machines.

Previous dust control methods gave the workers only partial protection. In addition, exhausted air was not cleaned sufficiently to permit recirculation. Result—high heating costs, and drafts resulting from open window ventilation.

With the installation of a dust control system consisting of 8 Type N Roto-Clones,* all problems were solved. Working conditions were improved to the point where buff operators, for the first time, had clean faces. Because of Roto-Clone's high efficiency cleaning, exhausted air can now be recirculated to the working areas during the winter months. Result—savings in fuel that over a three year period will offset the difference in cost between Roto-Clone Type N wet separation and other dry separation methods.

Roto-Clone dust control returns dividends in many ways—and there's a type and size to meet every problem. Ask your local AAF representative for copy of Bulletin No. 270 describing Roto-Clone'smany applications or write direct to—

AMERICAN AIR FILTER COMPANY, INC.

366 Central Avenue, Louisville 8, Ky.

In Canada: Darling Bros., Ltd., Montreal, P. Q.

AAF

ROTO-CLONE®
DUST CONTROL EQUIPMENT

**ROTO-CLONE is the trade-mark (Reg. U. S. Pat. Off.) of the American Air Filter Company, Inc., for various dust collectors of the dynamic precipitator and hydrostatic precipitator types.*

walks softly carries a big stick

STOCK No. 1616 • EXECUTIVE OFFICER

Take a smart tip from old Teddy Roosevelt. No need to carry a chip on your shoulder or a ton on your feet just to keep your toes safe. For *built in* under the sleek, smooth toe of this handsome new Lehigh safety shoe is the famous Lockrim* steel toe box that's always prepared for trouble "just in case". Designed by Lehigh for the U. S. Navy after their famous dress shoe, a million ex-gobs will tell you how comfortable it feels... how smart it looks. Display it to your employees. They'll snap it up for foot-safety in the plant... dress wear outside!

LEHIGH SAFETY SHOE COMPANY
ALLENTOWN, PA.
Division of the ENDICOTT JOHNSON CORPORATION

How To Make Fire Hose Last

MOST industrial fire brigades get about half the useful life out of their fire hose. The beating it takes, due to inadequate or ill-advised maintenance methods, knocks the vitality out of it just twice as fast as necessary. Modern production methods, with closely governed quality controls, allow almost no sub-standard hose to reach the user: what happens to it in the plant is up to the safety and fire protection force.

• Probably nothing is as potentially disasterous in fire fighting as the discovery of torn or rotted hose—then it is too late to do anything about it. Only constant inspections of plant hose and approved maintenance methods will keep these life-lines ready for use.

One of the nation's largest manufacturers estimates that three-fourths of all hose failures it examines are due to worn or improper fittings.

Recommended equipment on all hoses is a short-shank coupling with clamps or bands and an expansion ring. The fitting shank which is inserted in the hose should have a radius at the end to prevent cutting the tube. Any injury to the tube allows water to get into the reinforcing fabric: since water can travel some distance between tube and fabric before it causes breaks in the cover, a lot of hose failures can be traced to this cause—even though the rupture occurs many feet away from the hose end.

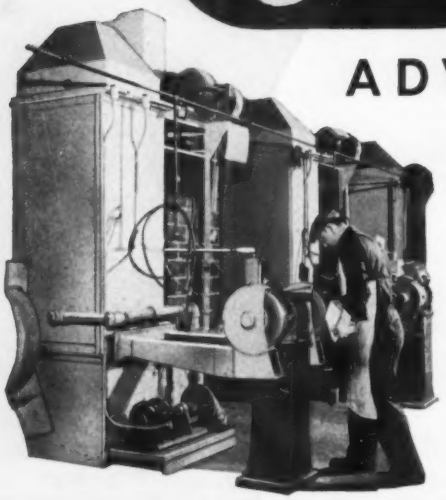
It should never be necessary to remove part of the tube to insert the coupling shank. If it is, there is something wrong with the hose-coupling combination. Re-

(Continued on page 42)

12 Ways to Keep Hose in Fighting Shape

1. Avoid exposing hose to extreme hot or cold temperatures.
2. Keep stored hose out of the sunlight.
3. Stay away from acids, chemical extinguisher solutions, oils, caustic fumes and iron rust with the hose.
4. See that hose is protected from chafing on ground or street by vibration of pumps.
5. Reel hose carefully, making sure it is not twisted in reloading.
6. Drag hose over rough ground only when you have to—don't pull it around unnecessarily.
7. Give hose a rest at regular intervals. Take it out of harness and store it, replacing it with other hose.
8. Use fire hose for drills and fires—not general utility purposes.
9. Test hose to proper pressures twice a year. When you do, be sure one set of hose is left in fire-fighting apparatus, ready for use.
10. Wash muddy hose off as soon as possible after use. Mud might contain harmful chemicals.
11. Be particularly careful about drying hose thoroughly in freezing weather.
12. Re-fold stored hose every three months, changing the bending points.

Investigate



ADVANTAGES of WET-TYPE DUST COLLECTORS

Recent developments have uncovered many new uses for Wet-Type Dust Collectors. Now, more and more industries are taking advantage of the many features offered by this method. HEAT SAVINGS, FLEXIBILITY, and GREATER SAFETY are but a few of its benefits.

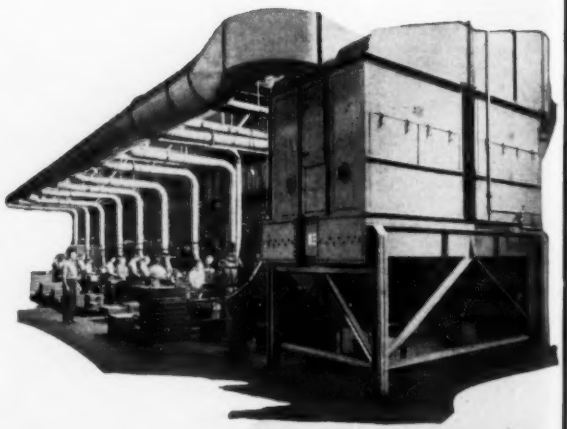
Consider

SUPERIOR ADVANTAGES of Hydro Whirl!

"Hydro-Whirl" offers these and more. Simplicity and compactness of design and rugged construction combine to provide EASIER MAINTENANCE, LONGER LIFE and GREATER EFFICIENCY.

Write, wire or phone for details on how to make your problems pay dividends in added safety and increased production.

Ask for Technical Bulletin 101.



For Finer Finishing Equipment — In Any Industry — It's

PETERS-DALTON Inc.

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What you should know about

Industrial Exhaust Systems

Practical information on dust control equipment: what it is, how it works, and how to select it for your needs.

Part 2, the conclusion, describes various types of dust collectors, points out their characteristics and most effective applications.

THERE is no *best* type or kind of dust collector; but there are best or recommended ones for each particular application. All reputable makes and types of dust collecting equipment will do excellent jobs of separating contaminants from the air and preparing it for economic, safe disposal or reclamation *if* they are selected wisely for the specific job. No single type has all the merits: some gather smaller particles of dust than others, some are less expensive to install, others are less costly to maintain. Satisfactory service depends, therefore, upon use of appropriate equipment to combat the specific hazards presented.

D. SELECTION OF COLLECTOR

In determining what kind of collector is indicated, attention must be given to the characteristics of the job and the results desired:

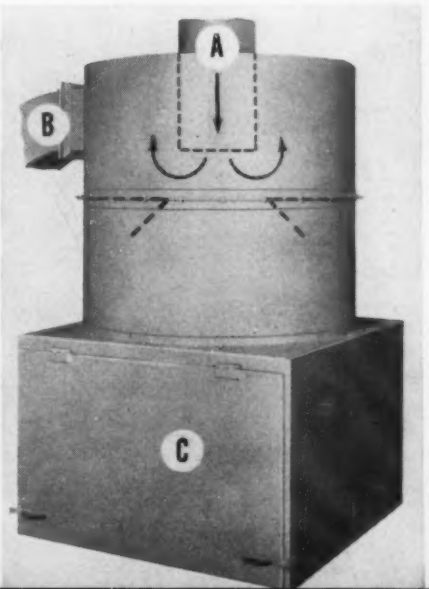
• *How efficient must the collector be?* Permissable dust concentrations are specified in state and local codes for protection of workers, and these should be regarded as absolute maximums. The nuisance problems of releasing contaminants to the outside air must also be considered. Location of the plant is often the deciding factor in this consideration since, for instance, a sawmill in open country does not have the same community problem as a processing plant in a crowded urban area.

• *The particle size and dust load of air entering the*

Dry units drop dust by air motion

Gravity Trap

R. C. Mahon Co.

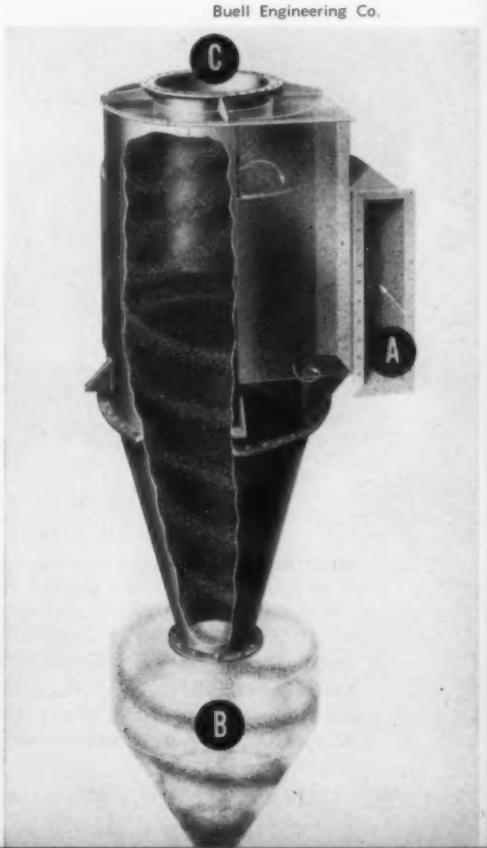


QUICK CHANGE of direction by air current in gravity trap (left) loses heavier dirt. Air travels from intake (A) to outlet (B) while particles drop to container (C) for disposal.

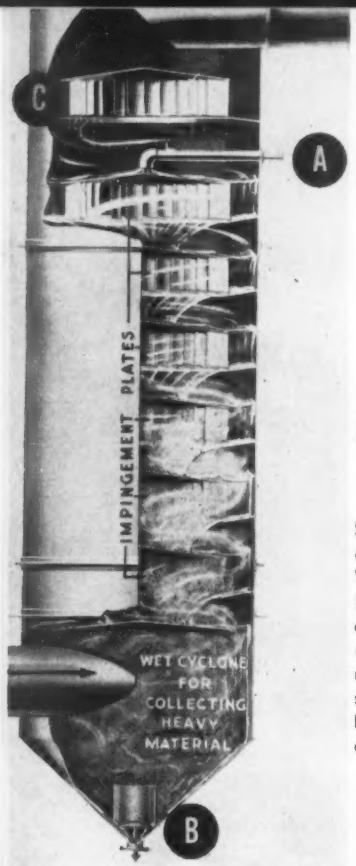
CENTRIFUGAL WHIRL forces dirty air to outside of cone as it enters (A) high efficiency cyclone (right). Dirt is deposited (B), and clean air seeks lower resistance area and passes out top (C).

Cyclone

Buell Engineering Co.



Dust is turned into sludge by wet collectors, eliminating disposal hazards



Claude B. Schneible Mfg. Co

Impingement

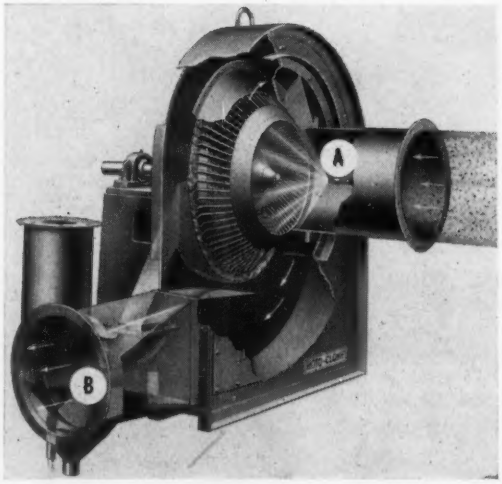
STRIKING wetted plates, air is forced upwards. Water, flowing from inlet (A), washes sludge down to outlet (B) for collection. Entrained moisture is caught by separator element (C) before cleaned air passes out the top of unit.

Newcomb Detroit Co.

Scrubber

WASHING through several curtains of water, or other liquid, separates dirt particles in scrubber-type collector (above). Air enters (A), dirt settles to bottom of tank (B) as clean air passes out top through moisture eliminators.

American Air Filter Co.



Dynamic

FAN BLADES whirl sludge to hopper of wet dynamic collector (right). Water spray enters unit with dirty air (A), clean air passes out (B).

collector, as well as the nature of the dust to be separated, are probably the first thoughts in deciding upon collector type. In measuring value by these factors, more importance should be placed on the volume of contaminant left in the air than on the percentage of removal achieved as an indication of collector efficiency. This is true because, although less than 1% of a very fine dust may be released after collection, if the original volume was very large, the small residue may still impose a serious problem. On the other hand, 93% removal of lighter dust loads may pose no hazard.

- *Physical and chemical characteristics of the dust are important items,* and may limit the selection of collectors to rather narrow choices. Highly combustible magnesium dust, for example, must be collected and disposed of in sludge form—a dry type collector is obviously inadvisable. Similarly, toxicity and fire hazards of the material to be separated may govern the handling of the entire exhaust system.
- *While initial cost of equipment should not be the deciding factor, investment considerations are naturally important.* Costs vary tremendously, from the common cyclone to the electrostatic precipitator. Another practical item is the amount of space available for collector installation and the adaptability of different units to outside or elevated placement.

Dry Centrifugal Collectors

The same general principle is applied by all types of collectors: contaminant particles are acted upon by

some force, which acts differently upon the air stream in which they are carried, so that they are removed from it and retained, while the air stream passes on. The separating force may be gravity, centrifugal pressure, filtration, impingement, electric charges, etc.

Settling Chambers. The simplest dust collector traps contaminants by gravitational force. Its use is limited by its inability to effectively separate particles less than 150 microns in size, and by the necessarily large size of the unit. The settling chamber is used largely as a precleaner to remove large particles before contaminated air enters a higher efficiency type of collector. This lowers the dust load to be handled by the second cleaner and prevents excessive wear on the higher efficiency unit.

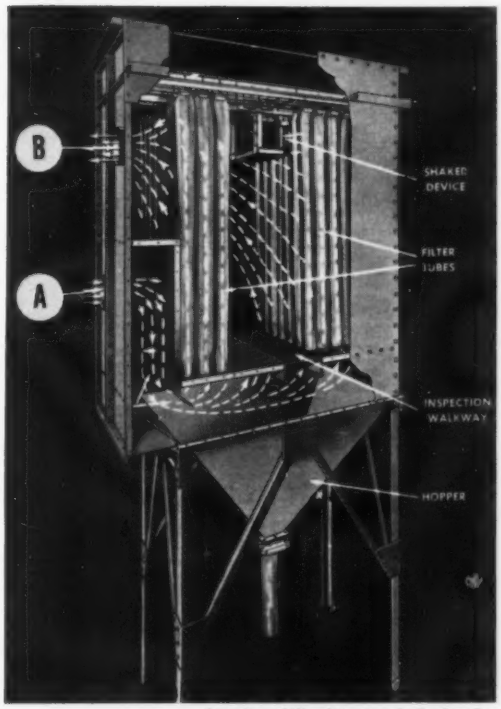
Cyclone Collectors. The various cyclones carry the centrifugal force principle of separation to varying degrees; but the fundamental operation is the same: a change of direction—or a continuous directional change—is employed to throw dust particles out of the air stream by centrifugal force. The *common cyclone* whirls the dusty air around the inside of a cone—much like a spinning top—concentrating the particles in the air layer next to the collector walls. The air circles down the cone, depositing the dirt at the bottom outlet; while the air, reaching the apex of the cone, escapes to the low-pressure area at the center and out the top.

Skimmer-type cyclones are simple cyclones with another cyclone—or part of another—inside them. The inner cyclone has slotted vanes to direct air back through it after having once gone through the outer cyclone. This recirculation increases efficiency over the common cyclone, but both types are used most effectively on coarse particles. Skimmer-type cyclones are not usually employed to separate sticky or linty material, as the vanes of the inner chamber become clogged.

High efficiency cyclones differ in proportion and design from the common cyclones, but they employ the same centrifugal principle. Smaller in diameter and longer bodied, they develop greater velocity of descending spiral air movement and increased momentum of small particles. Efficient collection of particles as fine as 20 microns is thus gained. Use of identical cyclones in series seems to hold slight advantage over a single unit. Since the second can separate particles no smaller than the first, little additional collecting efficiency is gained.

Dynamic Type Collectors. A fan with specially designed impeller blades is an integral part of this centrifugal collector. Dust-carrying air is sucked into the fan at its center, and the whirling blades throw it to the outer edges. The blade tips then deposit the dust in a secondary circuit which it carries to a hopper where it is deposited.

Smallest particles are caught by electrical or fabric separation

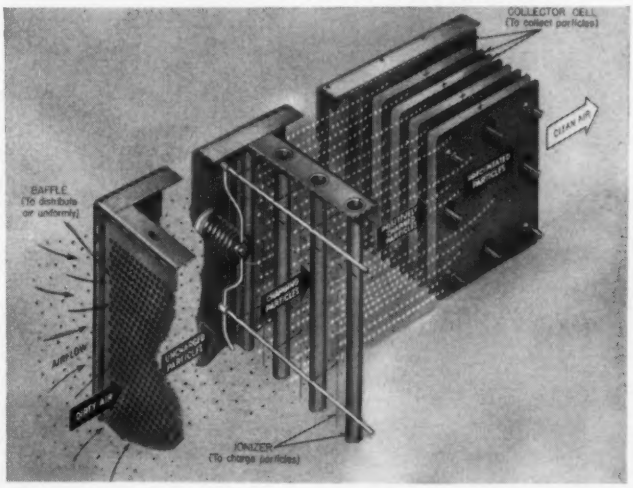


American Wheelabrator & Equip. Co.

Cloth Collector

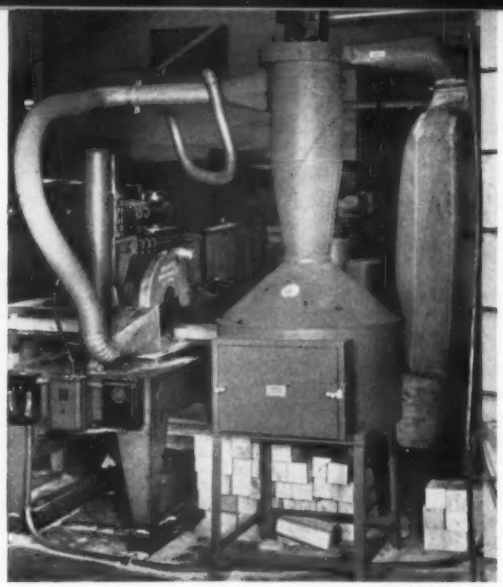
TUBES or envelopes trap dust as air is forced up through them in cloth collector (above). Entering (A), dirty air goes in open tube ends, out closed tops to outlet (B).

Sturtevant Div., Westinghouse Electric Corp.



Electric Precipitator

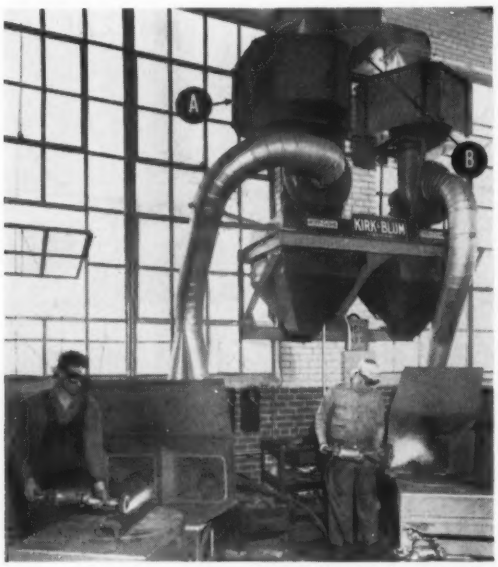
CHARGED particles, in electrostatic collector (left), are attracted to — and held by — oppositely charged plates. Finest dusts are collected as air passes through. Unit operates on Cottrell principle.



Torit Mfg. Co.

1. Unit System Uses

SPOT HAZARDS can be removed by unit collectors, employing various separator types. Gar Wood Industries, (Highland Park, Michigan) uses a cyclone-type unit to exhaust from circular saw.



Kirk & Blum Mfg. Co.

2. Recirculating Air

SEASONAL provisions are built into a dry dynamic collector for part-time air recirculation (above). To save heating costs in winter, cleaned air is returned to room through filters (A). In summer it is vented outside (B).

3. Precleaning Air

WEAR on cloth collector (B) is cut by pre-cleaning operation of cyclone unit (A) (right). Double hookup avoids possible contamination of outside air when exhausting to a crowded urban area.

← Three factors to consider when planning your exhaust system

Wet Type Collectors

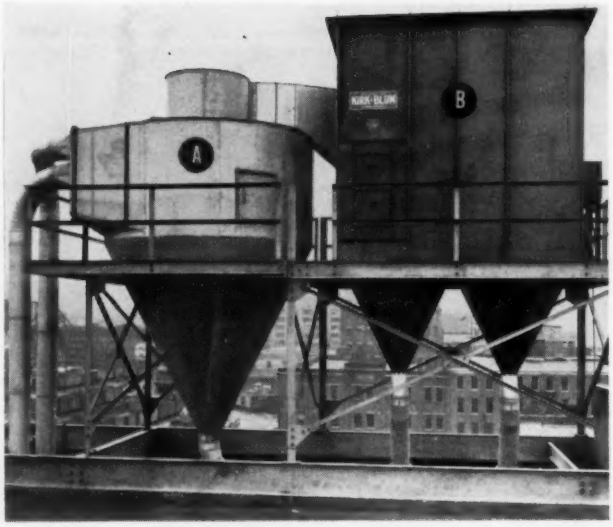
The common principle in wet collection of dusts is the use of a liquid, usually water, in which to trap contaminants and convey them to disposal or reclamation. Either impingement of the air against a wetted surface, or passing the air through a bath—or a combination of both principles—is employed. Moisture eliminators then remove entrained droplets from the air before it leaves the unit. As a group, the wet type collectors have a relatively high collection efficiency, and they remove the secondary dust problem in disposal of refuse. The presence of water may pose threats of corrosion and, in cold weather, freezing; however, when exhausted air is room temperature the system is usually free from freeze-ups during operation.

The main advantages of wet collectors are to be found in their ability to remove combustible and toxic dusts in harmless form. Disposal of these materials as sludge thwarts such threats by eliminating a secondary dust problem in removal. From an operational point of view, constant resistance and continuous functioning are also assets. Since the collected refuse is washed away, a minimum of maintenance work requiring shutdowns is needed. Control devices on wet units requiring water flow should be so set that the water flow starts before the dirty air is forced through the collector, and flow should continue for a short while after the air flow is shut off to prevent contaminants from clogging the collector elements.

Impingement Collectors. Dirt laden air is forced against a water spray and is subjected to violent

(Continued on page 46)

Kirk & Blum Mfg. Co.



Every Employee a Fireman

By J. J. BANACH

Do the fellows who manufacture safety equipment practice what they preach? They certainly do, if Ansul Chemical Co.'s fire protection program is any indication. Mr. Banach is Ansul's Safety Director. - *Editor*

EVERY employee a fireman? You're skeptical? Well, it's true. Every one of our 200 plant employees is a fireman. Every one has had experience fighting actual fires. Every one has handled several types of fire extinguishers. And, we're convinced that every one can put out an emergency fire if the occasion arises.

With knowledge, fear is destroyed. Since our employees know the facts about fire, they are not panicked at sight of a flame. Fires are snuffed out before they have a chance to grow big—and dangerous.

Each year for the last three years, all of our plant employees have taken a two-to-three hour training course. First, they were taught the mechanics or chemistry of fire. Then they became familiar with the various types of first-aid fire equipment. This included learning the most effective techniques in using each piece of equipment. Lastly, they were given an actual fire to extinguish. Reinforced by this fire knowledge, our people had no difficulty putting out their fires.

It's all well and good to make every man a fireman, but has it paid off? Yes, we believe it has. In the 35 years we've been in business, we've had no major fire. In the last 15 years, we've submitted only one fire damage claim to our insurance company. The damage in this case was less than $500.

15 year record:

One fire claim- $500 loss

We do have fires, though—several a year. But before we explain those fires, it may be a good idea to take a quick look at our plant.

Sulfur and methyl alcohol are two important raw products in our chemical plant. Both are special hazards and have caused a few small fires in the past.

The physical layout for both our manufacturing divisions (chemical and fire extinguisher) presents a serious fire hazard. Only six of our 24 buildings are of modern, fire resistant construction. The remaining 18 are old, wooden buildings: they are being replaced, but it takes time.

Our other fire hazards are Class B and Class C. They include materials such as gasoline, naphtha, ether, paint, solvents, oils and electrical equipment such as transformers, circuit breakers, turbines, small motors, etc.

Refresher courses keep every worker ready to fight fire

Brigade members work at all fire protection phases - from housekeeping inspection . . .

. . . to equipment maintenance

TRASH, left near fire extinguishers, is dangerously poor housekeeping. Instructor Bill Paulsen walks through plant inspection with brigade trainees, pointing out possible fire hazards (above). **ROUTINE** inspection of wheeled extinguisher is conducted weekly by brigade member (below), followed by thorough examination every three months. He checks hose, fittings, nitrogen pressure, dry chemical chamber.

We take every step possible to minimize these hazards. Flammable liquids are carefully stored in a separate building, paint spray booths are water-washed and hazardous quantities of paint spray residue are avoided by frequent cleaning. Aisles are kept clear, ample free space is provided around fire equipment, raw materials are stockpiled so as to avoid rapid spread of fire.

Since we're in the business, fire equipment is especially important to us. Here's a rundown on what we have to protect our Class A, B and C hazards:

- 98 dry chemical hand fire extinguishers
- 6 carbon dioxide hand fire extinguishers (used mainly in our research and methyl chloride plants)
- 32 soda and acid fire extinguishers
- 10 water pumps
- 14 1" and 1¼" hose lines
- 8 2½" hose lines (250 feet of hose)
- 4 wheeled extinguishers
- 1 trailer unit with two wheeled extinguishers and eight hand extinguishers

Besides this equipment, we have other specialized fire fighting gear such as ladders, axes, etc.

The men who, in most cases, would be called upon to handle all this fire equipment in an actual emergency make up Ansul's 35-member fire brigade.

45 acre plant area zoned to simplify fire-fighting

Our plant covers 45 acres; to simplify our fire fighting problem, we have divided the plant into eight zones. After a general fire alarm has been sounded, short toots are blown to indicate the location of the fire. Two short toots for the second zone, eight short toots for the eighth, etc.

All members of the fire brigade answer every fire call. Each man is assigned a specific job, such as handling a hose line, obtaining a ladder, rolling out the wheeled dry chemical equipment, etc. A number of men are assigned to each function, thus insuring that the job is done and done well.

Ansul's fire brigade is spearheaded by our fire safety committee, composed of maintenance superintendent, fire chief and safety director. This committee meets immediately after every fire drill; drills are staged at irregular intervals, averaging one a month.

After our session, we call a meeting of the entire plant brigade. At this time, we criticize tactics during the last fire drill, discuss other fire safety problems and practice new fire fighting techniques.

A typical fire drill took place several weeks ago. Four hose lines and eight hand fire extinguishers were put into operation in two minutes and seventeen seconds. This wasn't bad, but we wanted to improve it. In our "critique" meeting, we thrashed out ways to cut valuable seconds from this time.

Brigade members also handle plant fire inspection. Frequent checking of fire equipment is made and a thorough inspection is held every three months. Date and results of inspection are listed on a chart which is

(Continued on page 44)

Candy Is Dandy

Workers can win free safety shoes in Goodrich campaign to step up individual contact for safety

FREE shoes are the reward for one of 25 monthly winners.

Winners get candy bars, while . . .

losers settle for chewing gum

OPPORTUNITY for individual safety contact is presented in distributing candy to winners (top) or gum to losers.

EVERY month, twenty five B. F. Goodrich employees are given a free pair of safety shoes. The lucky recipients, like the smiling worker above, are winners in Goodrich's novel candy-campaign to cut accidents.

Here is how the plan works:

Each employee in all departments that have had no disabling accidents during the calendar month receives a bar of candy. Around the wrapper of the popular brand candy is a safety message, congratulating the worker for helping his department's accident-free month and urging him to keep up the good work.

Workers in departments that have not had a clean safety slate for the month receive a package of chewing gum instead of candy. The message wrapped around their booby prize says, "Sorry, no candy. Here's something for you to chew on. We hope you will get your candy and a chance on a pair of safety shoes next month."

• Only the candy winners have an opportunity to win a pair of shoes. In 25 of the candy wrappers are tickets entitling the recipients to claim the free shoes.

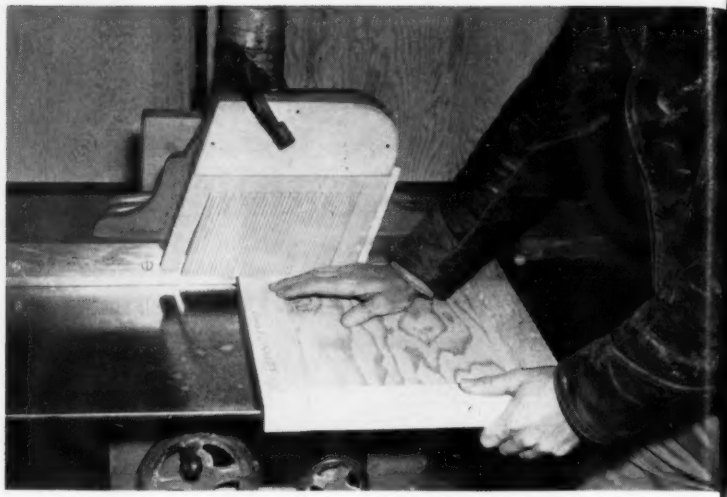
Department foremen distribute the candy and gum —more than 12,000 items are handed out each month— and see that prizes are awarded to winners in their departments. The entire project is supervised by two

(Continued on page 45)

Solutions To Spot Problems

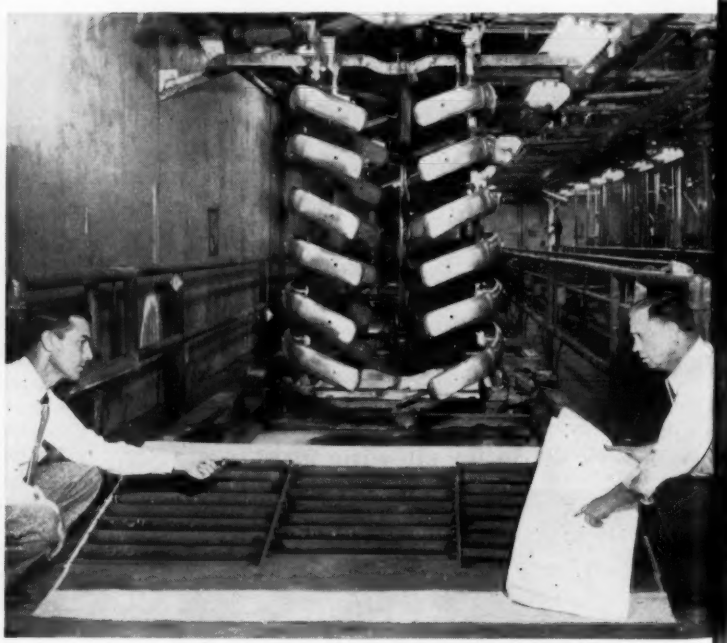
NEW schemes for safeguarding production machinery are constantly being introduced, thanks to the tireless ingenuity of safety engineers. Many, like those pictured here, while they are solutions to spot problems in individual operations, may help plug a gap in the protection programs in other plants too. Maybe some of them can be put to work in your plant.

These brainchildren have all proved practical and helpful. One, the lathe guard (lower right) was developed after a worker had been killed on the machine by a lathe knife that crystallized at 2900 r.p.m.: the others were fortunately installed before such tragic lessons were learned. Another experience-based installation is a telephone in the freezer of a west-coast cold storage plant. It was put in after a worker was accidentally locked in with the hams, and spent several freezing hours before his knocking on the door was heard.



For a wood shaper—inclined springs . . .

HAND-MANGLING shaper is doubly protected at DeMarco Cabinet Co. (Los Angeles) by clamping wooden springs over guard dome. Springs are 8" long, cut at 10 deg. angle. They enclose blades, keep workers' hands out of danger, also eliminate snagging by preventing wood from being drawn backwards.

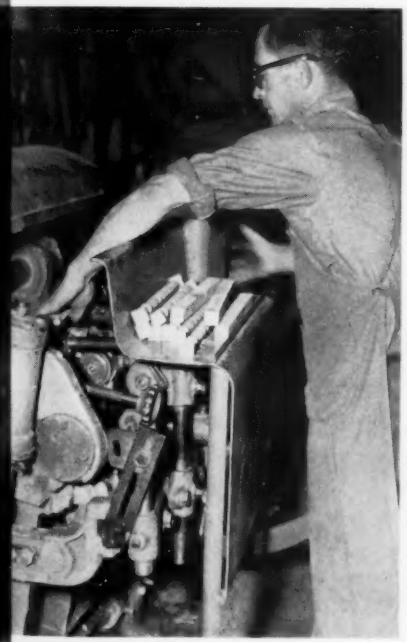


For an open caustic tank—rollers

CAUSTIC SODA tanks, heated to 200 deg. F., don't get workers at U. S. Spring & Bumper Co. (Los Angeles). State safety engineer points to rollered incline which throws man backward if he accidentally pushes monorail load too close. Pressure on rollers stops monorail instantly to act as barrier, sounds warning bell heard throughout the plant.

. . . and a dome housing

DOME GUARD, over which wooden springs (left) are clamped, is cast aluminum with steel "fences" to close front areas. Dome does not interfere with dust exhaust outlet.



. . . or a lathe—shields

WORKER'S BODY is protected by blade shield and rounded ⅛" steel screen. T-slots permit vertical and horizontal adjustment, while guard forms convenient shelf. Steel leg supports entire shield.

It can happen here. Decide in advance what steps will be required by using

Simulated Emergencies

By DONALD LEWIS

SAFETY men can take a cue to plant protection training from the armed forces. Remember the maneuvers and practical problems that wartime recruits went through? Why not adopt this valuable training aid in preparing plant groups to meet industrial emergencies?

Material is plentiful for planning "dry runs"

To develop practical problems in your plant, you have only to look around you for plenty of material.

- LIST the obvious danger spots first—areas where accidents are most frequent or where fires are most likely to break out.
- OUTLINE the types of emergencies which might occur in these places, and you have your simulated trouble-call.
- DEVELOP the problem by asking: if this should happen, what would we do? What equipment would we need? What assistance might we call? What reports and follow-up should be made?

The three-step plan, discussed in chalk-talk fashion by the training group, will enable protection men to arrive at predetermined courses of action tailored to the individual problem. Actual dry-runs of the problems discussed will put the training in action, test the advisability of different methods for meeting the emergency.

Then back to the meeting room for a critique: how effectively was the situation met? What factors did we fail to consider in our briefing? What steps should be taken if the simulated emergency were to become a real one?

Here is an example of such programs' pay-off: a man missed the step on a moving freight car and lost a leg under it. The plant protection man at the railroad gate, trained by the practical program method, applied a tourniquet, dispatched onlookers for stretchers and blankets, and notified the medical department. His work was fast, and the victim was in the hands of the medics within minutes. Quick, efficient handling of this case might easily have been the determining factor in the victim's recovery.

Simulated emergencies become real ones

At recent training meeting it was recalled that *two of the problems which had been developed and discussed were duplicated in almost every detail by actual accidents in the plant.* This is more than coincidental: checking accident records is an easy way to find subjects for problem consideration. It is surprising that so little use has been made of simulated emergencies as training aids, particularly when we read almost daily of naval maneuvers and simulated defense exercises by the Air Force. Take a look at today's newspaper. Isn't there an item in it that you can take to your training groups and ask, "What would we do if the same thing happened here?"

THE AUTHOR has wide experience in planning and instructing safety work and emergency crews in all phases of plant protection work. His present position is with a large manufacturing company.

Hand Injuries — An $83,000 Loss

IN SOME types of industry, hand injuries are far more prevalent than is realized. Take the case of Saco-Lowell Shops, Maine manufacturer of textile machinery: *47 percent of all injuries to workers in* 1949 *were hand and wrist accidents. They cost the company and workers more than* $80,000 *last year.* While less than 1 percent of the 3,457 hand injuries left physical impairment, the psychological hurt quite frequently attending accidents may be just as serious as actual functional disability.

Special emphasis has been placed on preventing hand injuries at Saco-Lowell, under the leadership of Medical Director Frank W. Barden. Constant high-lighting of this type of accident, Dr. Barden believes, will bring hand injuries down in a hurry.

Thorough investigation of all accidents helps prevent others

Every time an accident happens, an investigation crew goes to work. Before any changes are made, pictures are taken of the scene, the injured person and photographic follows-up are planned. The supervisors of the department plan their attack from this photo evidence, working with Dr. Barden and the safety director.

● *The first lesson learned is that roughly* 85 *out of* 100 *such mishaps are traceable to worker failings,* as witness the cases below. Operational modifications are sometimes indicated, however: study of accident case number 2 below, resulted in changes which now feed metal to milling machines cold, so that operators will have no cause to wear gloves.

● *Results of accident investigations are carried down the line to all workers.* Personalized letters to foremen let them know how and why an injury occurred, so that they can pass the information along. Saco-Lowell makes its own safety posters, using the investigation photos: actual pictures of accidents which happened in the plant bring the lesson home with more impact than do drawings of hypothetical cases, according to Dr. Barden, and discourage the "It can't happen to me" attitude on the part of workers.

To keep disability to a minimum and promote healing, Saco-Lowell starts rehabilitation early. Dress-

How did it happen? Immediate camera investigation shows the causes a

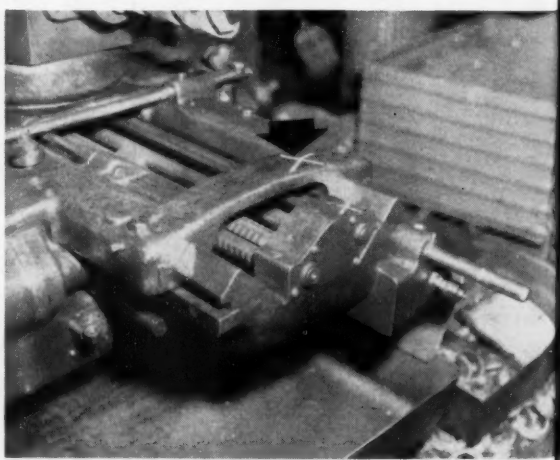
These are typical cases:

1 **CARELESSNESS** caused amputation. Worker leaned hand on machine (at arrow); when carriage beneath it moved, tip of finger was clipped off.

2 **DISREGARD** of safety rules cost a thumb (still in the glove) and the tips of all other fingers. Worry prompted worker to forget prohibition of gloves when running milling machine: it caught in blades.

3 **WRONG EQUIPMENT** led to bad laceration. Men were using wrong type of cart to move steel plate. Plate struck wall, slid into unprotected hand (arrow). Note poor housekeeping.

Case 1 — Carelessness



Case 2

How was $83,000 lost? Here is a complete cost breakdown of last year's hand injuries at Saco-Lowell Shops →

I. Number of Injuries		
Total hand and wrist accidents		3,457
Percentage, hand and wrist injuries to total accidents		47%
II. Time Lost		
No lost time accidents*		5,174 hrs.
Lost time accidents		2,796 hrs.
	Total	**7,970 hrs.**
III. Cost of Hand Injuries		
To Company: 3,457 cases, @ $3.51 (estimated average)*		$12,134.07
Workmans compensation paid, (est.)		$ 4,634.00
Hospital, medical		$ 1,626.00
To Employees: lost in wages		$ 2,342.00
Since intangible cost factors are believed to be three times the tangible cost, final cost would be:		
To the company		$73,976.28
To the workers		9,368.40
	Total	**$83,344.68**

*Based on:
½ hr. for treatment (base pay $1.23 per hr.) and cost of medication—$1.17. Since average case is treated three times at hospital, total cost is $3.51.

ings are applied to keep as much of the hand mobile as possible. Exercise of the fingers is encouraged and whirlpool baths are provided. Knitting and crocheting are advocated to regain manipulation dexterity.

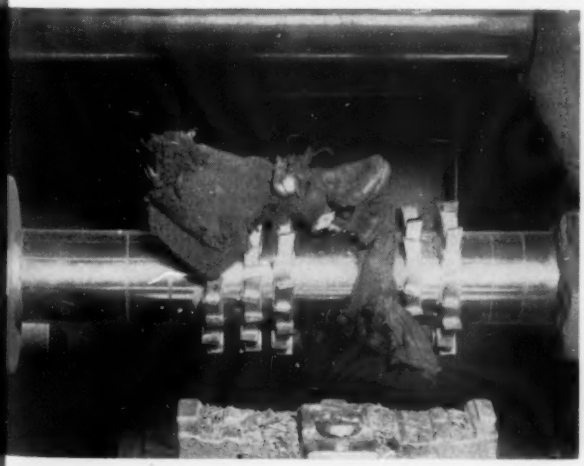
Rehabilitation starts as soon as the injury occurs

Dr. Barden recommends getting the injured man back to work as soon as possible, if not at his original task, at least at some task that he can handle. An attempt is now being made to set up a separate department for small assembly work. This will provide gainful work for injured hands in processes which will help them reach healthy function.

Preventive medicine has been wonderfully successful in eliminating the threats of small pox, tetanus, diphtheria and other dreaded diseases. Saco-Lowell's program of investigation and education is putting the same preventive approach to work in accident reduction. Dr. Barden suggests that such a mental inoculation, while it won't guarantee immunity, will go a long way in chopping the human factor—basis of 85 percent of the company's hand injuries—down to the disappearing point.

s and suggests preventions.

Case 2 — Disregarded Rules



Case 3 — Wrong Equipment

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OCCUPATIONAL HAZARDS Salutes

A Monument To Safety

ON HIS second day as an engineer in the U. S. Bureau of Mines, John T. Ryan helped on recovery operations after a coal mine explosion. That was the beginning of his work in safety—work which continued until his death in 1941. A few weeks ago, Mine Safety Appliances Co. dedicated a monument to Mr. Ryan and his work—the John T. Ryan Memorial Laboratory, world's largest research facilities devoted to the development of safety equipment.

Coinciding with the 36th anniversary of the firm which he founded with George H. Deike, the dedication ceremonies marked significant progress in safety equipment: from the five protective items produced by Mine Safety at its start, hundreds of products have been developed. They range from tiny first-aid kits to a complete mobile laboratory for air pollution surveys, and are used throughout industry.

The new four-story laboratory will be directed by Dr. Wm. P. Yant, and it houses a staff of engineers, chemists and physicists. A wind tunnel, high altitude chambers and an electron microscope that enables study of dusts at 100,000 diameter magnification, are included among the instruments with which the laboratory will help keep safety engineers and hygienists abreast of ever-changing production methods.

PROGRESS in miner's lamp is viewed at laboratory dedication by MSA President George H. Deike (left) and J. T. Ryan, Jr. Mr. Deike holds the lamp used when he and the late Mr. Ryan, Sr. started work in mines.

Pittsburgh Press

Electrical HAZARD SIGNS

KNOCKED OUT by HY VOLT!

WHEN Hy Volt hits a man he stays hit . . . usually injured, often killed.

For while Electricity serves virtually every Industrial need, it is only with care and experience . . . and constant warning . . . that workers are taught to safeguard themselves against such accidents.

Many more Electrical Hazard signs are shown in our Catalog No. 8. It's free on request.

STONEHOUSE SIGNS

For Accident Prevention

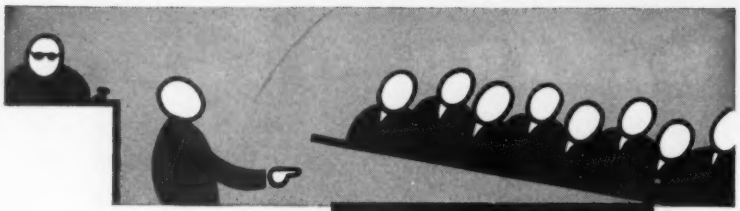
help to educate, warn, safeguard those who work with and around Electrical equipment. Post them for greater safety.

Stonehouse SIGNS, INC. Stonehouse Bldg. · 9th at Larimer · Denver 4, Colorado

MANUFACTURERS

"Stonehouse Signs Since 1863"

ACCIDENT PREVENTION SIGNS IN STANDARD COLORS AND DESIGNS



OFF THE DOCKET

Injured In Fall Down Elevator Shaft

THE claimant is a dentist with an office in the defendant's building. The dentist decided to do some work on Sunday at his office. The building was ordinarily closed, but each tenant was provided with a key to the front entrance. In the lobby there were two elevators, side by side. One was in regular use for passenger service alone and was manned by an experienced operator during office hours. During other hours, the electric current was turned off and that elevator could not be operated. The other elevator was used to carry freight, for emergency passenger service. Usually, it was operated by the janitor. When it was not in use, the door was kept locked. To open the door, the janitor used a slender piece of steel which was kept hanging on a radiator in the lobby. Some tenants knew of the piece of steel or key and used it to unlock the door and operate the elevator by themselves. These tenants prepared a small card bearing substantially the words: "Danger, elevator in use". When the tenants used this elevator, they usually placed this card on the elevator door in the lobby.

Plaintiff contends that when he went into the building on the afternoon of the accident, no light was burning in the lobby, but some light entered from the outside. No card was on the door. Without turning on either light in the lobby, he obtained the piece of steel, unlocked the door, opened it, stepped into the the semi-dark shaft and fell to the bottom, and was injured. Claimant seeks recovery on the theory that the defendant was negligent in the maintenance of the elevator.

Ohio has followed consistently the fundamental common law rule that in an ordinary tort action, the injured plaintiff cannot recover from the defendant, even though negligent, when the plaintiff, too, is guilty of negligence contributing to cause his own injury.

Recently, however, there have been two views in the determination of cases somewhat similar to the present case. In one, the Supreme Court held that there is a distinction between stepping into absolute darkness and stepping into semi-darkness and one stepping into darkness and falling, without any precautionary measures taken to ascertain the existing danger.

In the two cases referred to, both buildings were open to the public; they passed through inner doors that were not locked, and neither plaintiff knew that there was a stairway or elevator shaft beyond those doors. In the instant case, the plaintiff entered a locked building; the inner door through which he passed was locked, and he knew there was an elevator shaft beyond the door. Each of these facts was a warning. It is true that he said he thought he saw the elevator floor after he unlocked and opened the door, but he made no effort to turn on the light located near the elevator. He, therefore, did not exercise ordinary care for his own safety and his negligence was a proximate cause of his fall and injury.

Directed verdict for the defendant was proper and should have been granted.

Johnson vs. Citizens National Bank of Norwalk, Ohio Supreme Ct. January 11th, 1950, (90 NE2 145).

Refusal To Use Safety Devices

EMPLOYEE was instructed to repair an ore bucket elevator in a potash refinery which was shut down at the time. Power to operate the elevator was furnished by an electric motor, and cut-off switches were installed at both the top and bottom of the elevator.

Before beginning the repair work, one of the claimant's co-employees locked off the upper switch with a cotter key, but no one locked off the switch at the bottom or attached a warning tag. This was contrary to an enforced safety rule.

While he was making the repairs, the current was somehow turned on at the lower switch, causing the elevator to start and injure the claimant. Compensation award was reduced by 15% for failure of the employee to use the safety devices provided by the employer, consisting of a safety electric switch, pursuant to the requirements of the Mine Safety Act.

Jones vs. International Miners and Chemical Corp. (202 P_2 1080).

Heart Attack After Strenuous Work

MANNERY was repairing some leaking pipes. He ascended a ladder, started to disconnect the pipes and, because of their tightness, was obliged to use "extra strength on them to break them loose". While threading the pipe, he experienced a pain and burning feeling in his chest. He completed the threading, but the burning sensation increased and he drove home without completing the repair of the pipes.

His family physician concluded that he had suffered a coronary thrombosis; and was confined to bed and suffered later heart attacks. His physician indicated that he had no previous coronary impairment and that his heart attack was caused by his exertions on the day in question. The company's doctors indicated that in their opinion, claimant had had a previous coronary disease and that his attack was the culmination of its normal progress and was not causally related to his work when the first attack occurred.

An employee seeking to establish that a heart attack suffered by him was compensable under the compensation act must meet the test of showing that it was caused by an

unusual strain or exertion arising out of employment and beyond the mere employment itself.

The company's doctors indicated that upon examination of the claimant on the morning of the day in question, claimant contended that he was doing moderately heavy work (although on the preceding week he had been doing very heavy work installing a boiler) without any apparent ill effect.

Claimant's ordinary work was hard and strenuous, requiring frequent exertion. He was accustomed in the course of his regular duties, to disconnect or break pipe connections and to thread pipes. The use of additional effort where the pipe connections were tight or the dies had become dull through use were usual rather than unusual strains or exertions of his employment.

He was performing his normal, every-day tasks to which he was accustomed when he suffered his heart attack; and accordingly, he had not passed the test prescribed by the Supreme Court. Claim not compensable.

Mannery vs. Waters, Superior Ct. of N. J., May 16, 1950. (73 A_2 266).

Company Spy Injured On Premises

CLAIMANT was employed by the Ford Motor Company in 1929, as a machine operator. One of the company officials requested him while so employed, "to keep watch" on his fellow employees, for the purpose of detecting work shirkers and tool thieves among them. Official indicated to the claimant that this might involve some risk for him; but that the company took "good care" of those who did it favors. Claimant complied with this request.

It is indicated that fellow employees became suspicious of him, that on September 14, 1929, while walking a short distance from his machine,

some axles fell upon him from an overhead conveyor, causing him injuries from which he still suffered. The company considered the occurrence "peculiar" and until, 1935, furnished claimant with all necessary hospital and medical care, paid him full wages whether working or not, and in other ways showed him appreciation for the favor he had rendered. The company in 1935, offered either to pay claimant a large sum of money in settlement of his rights against them or to furnish him employment as long as he desired it, together with all necessary medical and hospital care. Claimant accepted the latter alternative. Company fulfilled its agreement until 1946, but thereafter refused to furnish claimant with care and treatment or to

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QUALITY JACKSON PRODUCTS

Headrest type
W-50
for Gas Welding,
Cutting, Brazing

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Jackson Goggles give adequate protection against the hazards of the jobs for which they are recommended. But to be effective they must also be worn. So we made them attractive in appearance, light and easy to wear. They are easy to adjust to any head size, and eye cups are easily fitted against the wearer's face.

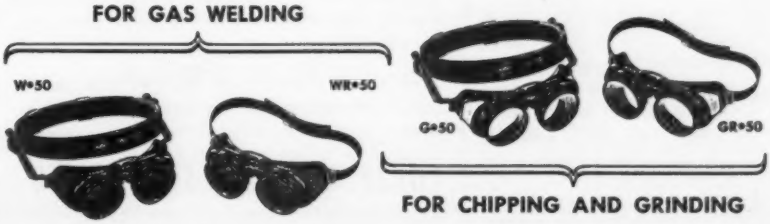
The headrest type goggles, shown above, have concealed springs to hold the goggles gently against the face, and may be moved up and down with one hand.

Made in four types as shown below, the welding goggles have 50 mm. lenses in shades from 3 through 6, with cover glasses for protection. The grinding goggles have clear hardened lenses only.

Jackson Products, Warren, Michigan

JACKSON GOGGLES

FOR GAS WELDING



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NEXT MONTH

The High Cost of Back Injuries And Hernias

continued

pay further expenses in connection with his injuries. As a consequence, claimant filed an action for damages for breach of contract in the sum of $2,500.00, for medical and hospital expenses incurred during the years 1946-1949.

Company moved to dismiss the action on the grounds that both parties were subject to the workmen's compensation act, that claimant's injury arose out of and in the course of employment, that the workmen's compensation commission had exclusive jurisdiction of the matter and that, therefore, the court was without jurisdiction. It is not prerequisite to a holding that injury arose out of and in the course of his employment to find that he was actually operating his machine at the time. It was of no consequence whether he was walking toward the machine for the purpose of operating it or was walking for the purpose of doing something else connected with his work or for the purpose of ministering to his own hunger, thirst, or personal comfort. His action in any such event was such as has been held to be beneficial to the employer, incident to and within the ambit of his employment.

If the inference was to be drawn that at the time of his injury, he was watching his fellow employees while he was on the job, during his working hours, on time for which he was being paid, and in connection with his regular work, one can only come to the conclusion that his spying activities were incident to and a part of his employment.

The civil action for damages for breach of contract was dismissed, as the claimant had full right to a recovery under the workmen's compensation act.

Dershowitz vs. Ford Motor Company, Supreme Ct. of Michigan, April 3, 1950. (41 NW_2 900).

Injured Lifting

Sagging Gate

CAMPBELL was employed as a guard at a shipyard. He was found lying unconscious near one of the entrance gates which he was tending. He was removed to a hospital and died some months later.

The guard had difficulty in moving the gate because the ground had heaved and the gate sagged. The medical testimony indicated that the guard was aging; that the arteries of his brain were hardening; that the exertion of moving or attempting to move the gate caused a surge of pressure in the brain of claimant, which brought about a rupture that ultimately caused his death.

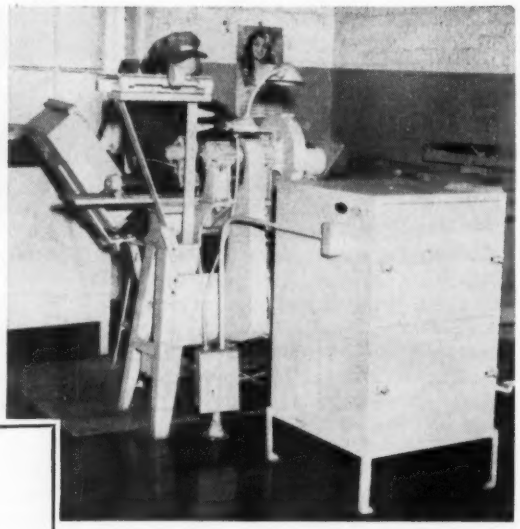
The death was determined to be as the result of an accident arising out of and in the course of employment and not by reason of death due to natural causes. The main injury was due to the lifting which raised the blood pressure enough to cause a cerebral hemorrhage or a cerebral hemorrhage from a vessel already damaged by disease process. The heavy lifting was enough to cause the hemorrhage. Employee fell down because of the cerebral hemorrhage and dizziness and the state of shock or collapse that he went into is the result of the hemorrhage. The striking of his head was secondary and incidental, but it may have contributed further to the brain injury. A sudden strain caused the rupture.

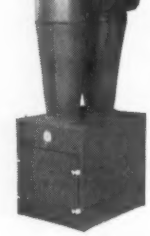
The fact that the decedent was not required to open or lift the gate did not prevent a recovery when the circumstances made it necessary and incidental to the regular occupation to open the other gate because a crane was blocking the regular gate; and that it was necessary to lift it because it had sagged.

TORIT

DUST COLLECTORS

Self-contained units for carrying away dust laden air around grinding, cutting and polishing machines.





TORIT Dust Separators

Torit also manufactures a line of cyclone type dust separators. There are types for both outdoor and indoor exhaust. Sizes range from ½ H.P. to 5 H.P., with the largest having a capacity of 2,100 c.f.m.

TORIT DUST COLLECTORS

get close to get all the dust from this buffing machine

How compactly a Torit Dust Collector will fit into your production layout is well illustrated above. Here only a foot of flexible hose is needed to connect the buffing wheel hood to the inlet of a Model 64 Torit Dust Collector, which, in turn, occupies a floor space less than 2 feet square.

Self-contained Torit Dust Collectors trap dust at its source and recirculate the cleaned air. They are easy to install, and may be moved as desired. Operating and maintenance costs are exceptionally low.

Torit Dust Collectors are built in sizes up to 5 H.P. For details and the latest Torit catalog, write:

TORIT MANUFACTURING CO.

311 Walnut St. St. Paul 2, Minn.

The injury arose out of and in the course of employment. Recovery allowed.

Campbell vs. Walsh-Kazier, May 10, 1950, Supreme Court of R. I. (73 A_2 239).

Climbing Stairs Followed By Heart Attack

CLAIMANT was employed as cashier and bookkeeper. He walked from the company's plant to the post office to pick up the company's mail, as was his usual procedure.

After walking back to the company's plant with the mail, he climbed a flight of stairs to reach the office in which he worked. About five or six minutes after reaching the top of the stairs, claimant with his hat and coat still on, went into the toilet on the second floor. While doing so, claimant began having a "peculiar feeling". Whereupon he walked out of the toilet into the offices, and suffered a cerebral hemorrhage which resulted in paralysis.

May 25, 1948, was a very hot day. The company resists an award for the following reasons: (1) That the claimant did not suffer an injury by any accident arising out of the employment within the meaning of the Workmen's Compensation Law Code; and that his injury was the result of a disease and not an accidental injury; and (2) If the attack was construed to have been an accidental injury, there is no evidence that any unusual or physical exertion required of the claimant by the employer was the participating cause of the attack.

The incident was determined to be an accident arising out of and in the course of employment. It was determined that in order to recover a Workmen's Compensation award, the physical exertion, which is the immediate cause of employee's injury, need not be unusual or excessive, nor does the employer have to know about an employee's diseased condition. The inferences were indicated from the evidence that the climbing of the steps contributed to claimant's attack regardless of his pre-existing condition, if such did exist. Attack occurred within five or six minutes of the exertion. Probabilities of what may have transpired supported the award made by the Board. Compensation was ordered.

Bussey vs. Glove Indemnity Company, et al, Ct. of Appeals of Ga., April 7, 1950. (59 SE_2 35).

Hand Cart Skid

Small hand carts can cause trouble when they must travel over uneven ground or railroad tracks. Allis-Chalmers Manufacturing Co. has removed the danger of jarring or upsetting the load due to bumps by replacing the standard sharp-angle skid (left above) by a loop skid (arrow). The new skid also does away with the hazard of injury to the man pushing the cart.

FOR THE DAVIS D-CARTON

2 new FIRST AID "MUSTS"

FIRST AID FOR BURNS

★ KILLS PAIN ALMOST INSTANTLY
★ ANTISEPTIC ★ GREASELESS
★ EXCLUDES AIR

Combines air exclusion, antisepsis, local anesthesia. Non-greasy, water soluble base is the perfect answer to a painlessly removable first aid for burns.

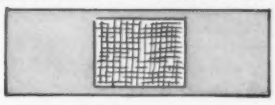
*Americaine Reg. U. S. Pat. Off.

SEND FOR BULLETIN NO. 318

*Americaine furnished in package to fit First Aid D-Carton System.

THE RIGHT DRESSING FOR EVERY FIRST AID NEED

*Band-Aid Patch Dressings 1½" square



*Band-Aid Elastic Adhesive Bandage 1"x3"

*Band-Aid Spot Dressings ¾" Diameter

*The Trade Mark of Johnson & Johnson

● Elastic ● Waterproof ● Flesh color
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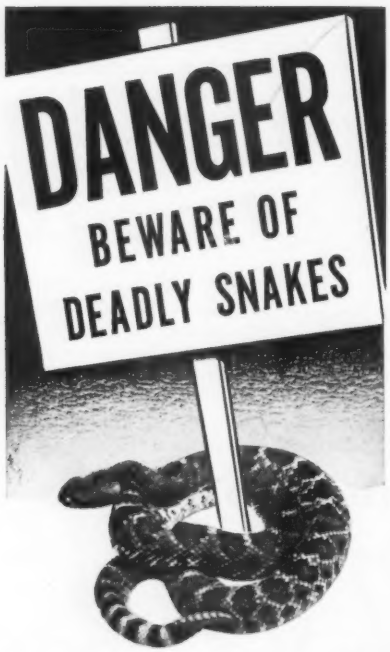
DAVIS EMERGENCY EQUIPMENT CO., INC.
45 Halleck Street, Newark 4, N. J.



Even the rattler's warning frequently is heard too late. Three other deadly reptiles common in the U. S.– the moccasin, the copperhead and the coral snake – give no warning at all! Workmen located in timber, swamp lands or rough country need protection against this lurking danger!

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A handy kit with all the materials for instant, safe treatment of snake bites. Powerful suction pump with two adaptors – operates with one hand. Real surgical lancet, tourniquet, antiseptic, adhesive compress, shock treatment. Full directions on inside cover of kit. Fits pocket on standard unit kits.

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Literature Featured In Ads

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A-1 . . . Better work results from full protection. Stanley Electric Tool's folder on the Flud-Lite eye shield shows how it is achieved.

A-2 . . . Free samples of No-Slip, the safe—yet lustrous—floor coating, are offered by Time Saving Specialties.

A-3 . . . Quik-Labels are continuous-strip pipe markers. Free samples of this easily applied identification is offered by W. H. Brady Co.

A-4 . . . The latest Stanzoil catalog describes Pioneer Rubber Co.'s full line of sure-grip gloves.

A-5 . . . A copy of the new Willson Products catalog gives information on all Willson gas masks, includes a handy selector table.

A-6 . . . 37% better production without adding a man or a machine—American Optical's newest booklet shows how this might be done through a planned visual protection program.

A-7 . . . Bulletin M-80, offered by Industrial Products Co., illustrates M & M rail clamps, used for car stops on loading platforms.

A-8 . . . First aid for burns and dressings for all needs are shown in Bulletin No. 319, available on request from Davis Emergency Co.

A-9 . . . Dryex, new component which fights corrosion and adds life to extinguishers, is described in a new booklet offered by Buffalo Fire Appliance Corp.

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tor says new literature offered by E & J Mfg. Co.

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A-26 . . . Recently developed applications for wet dust collectors are shown in Peters-Dalton, Inc.'s latest catalog.

A-27 . . . Better hand protection at lower cost is the aim of Industrial Gloves Co. Its new catalog shows all types of gloves and mitts for industry.

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A-32 . . . Wyandotte Zorball floor absorbent tracks only a fraction as much as other absorbents, says the manufacturer. Wyandotte offers to demonstrate this to you.

A-33 . . . Keep workers posted. Full details on how Dav-Son bulletin boards can be safety helpers are offered by A. C. Davenport & Son.

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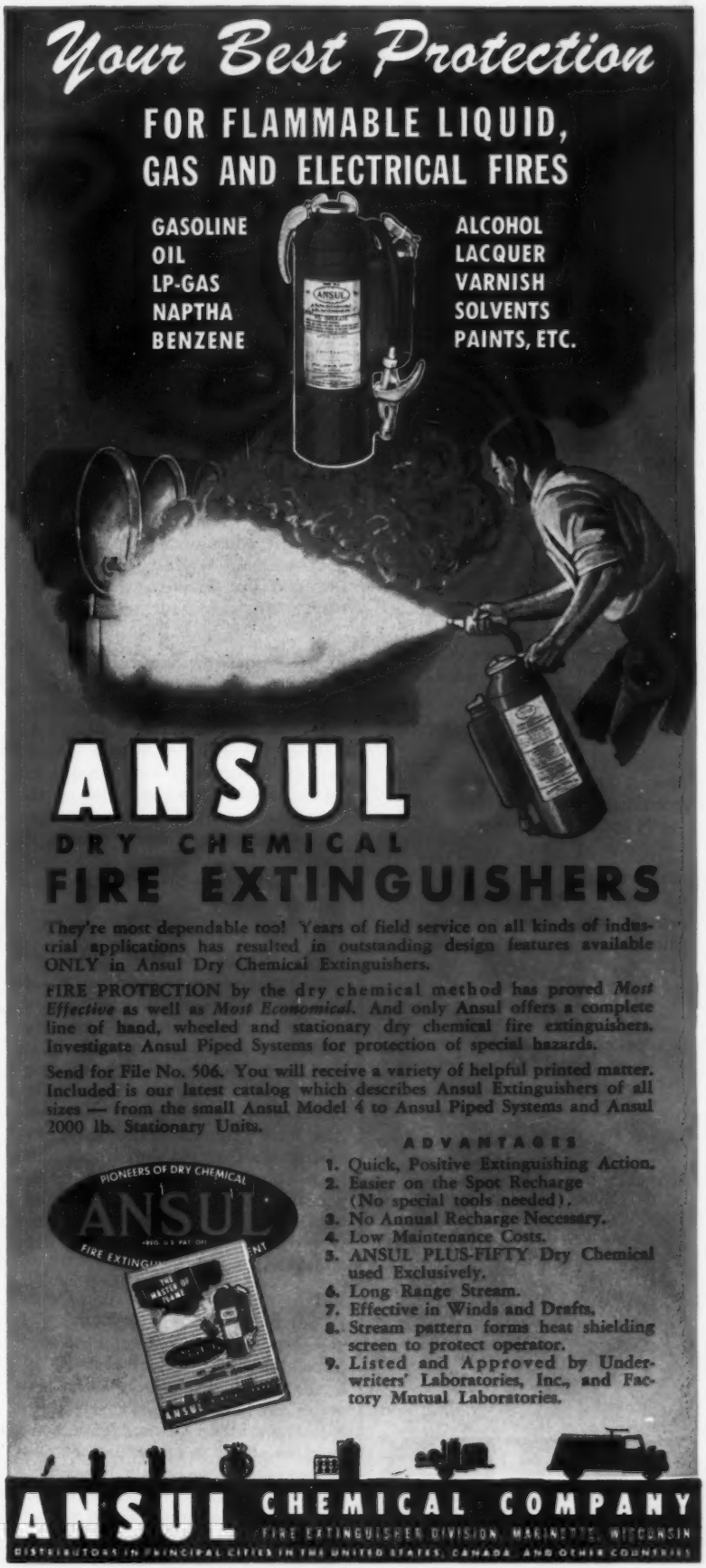
A-36 . . . Plant air fouled by dust? American Air Filter bulletin 270 will tell you how Roto-Clone can remove this health hazard.

A-37 . . . See for yourself how the Possons press safety device works. Positive Safety Mfg. Co. will tell you where in your area, and send a complete catalog too.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The GUARDSMAN is foolproof.

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PI 25 Chain Testing Procedure

Don't take chances on using worn or sub-standard chains. Periodic strength tests can be conducted with a dynamometer and simple test rack. Detailed drawings and explanations for setting up a low-cost testing unit are contained in a brochure available on request from W. C. Dillon & Co., manufacturers of the handy weight measuring device.

PI 26 One-Man Scaffold

The two-color, four page catalog released by Baker-Roos, Inc., tells how its light metal scaffold can be handled by one man to take care of any off-the-ground maintenance or repair work. Knocked down, the unit takes up little more space than an ordinary step ladder. In use, its components can be arranged to meet many different height and space requirements.

PI 27 Water-Wetting Agent

Half a dozen municipal fire chiefs sing the praises of Unox Penetrant, the liquid chemical that makes water wetter, in a 20-page booklet offered by Union Carbide and Carbon Corporation. A plain vs. "wet" water photo series helps prove the Unox case with dramatic shots of quickly extinguished blazes that would have been unmanageable without the penetrant. Easy-to-understand explanations of the principle behind wetter water will interest every fire-and-safety man.

PI 28 Blast-Proof Intercom

Executone, Inc., has come up with an electronic intercom system, described in its just-published brochure, that has full station selectivity to allow stations in hazardous areas to call stations in either safe or hazardous spots. Previously, hazardous-area stations in such a system could contact just the safe areas in a plant. Another feature: person being paged can answer into the intercom's microphone from a distance, usually without interrupting his work.

PI 29 Non-Slip Flooring

Dyna-Grip, described in a two-color brochure published by The Merchants Chemical Company, is a non-slip floor finish that goes on quickly and easily with a brush, forming a tough, gripping surface that is unaffected by temperature changes. Resistant to acids, alkalies, oil and gasoline, Dyna-Grip can be applied to any damp or dry surface except galvanized iron.

PI 30 Silica-Free Blast Grit

A 4-page bulletin describing Black Beauty, the non-metallic silica-free blast grit, is offered by American Wheelabrator and Equipment Corp. This abrasive has much the same properties as sand, without hazardous free silica. Testimonial letters shown in the bulletin tell of typical performance results.

PI-31 Flame-Failure Protection

Bulletin CG4751, released by Combustion Control Corporation, introduces their Fireye System FF-6, designed to provide electronic flame-failure protection and semi-automatic ignition control for all types of commercial and gas burning equipment. The bulletin shows how this equipment keeps a day-and-night check on flame failure, can be wired to sound an alarm in case of trouble.

PI 32 Eyewear Frame Selector

To help safety directors choose the right safety glasses for 69 specific jobs, Bausch & Lomb has produced a compact, easy-to-use safety eyewear selector. Job classification numbers on the guide are keyed to a sliding selection table that lists occupations from acetylene welders to zinc smelters. The right frame for each job is picked out by lining up number with title. Hip-pocket size, and very handy.

FILE E-108

TECHNICAL FILE ON SOLVENTS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

E. 108. BENZOL HAZARDS COMPARED WITH OTHER SOLVENTS. Toluene—($CH_3(C_6H_5)$), also called toluol, methylbenzine, methylbenzol and phenylmethane, is a little heavier than benzene (relative density of vapor to air is 3.2) is slightly less soluble in water, and has a higher boiling point, 111° Centigrade. Symptoms and effects are similar, however, except that prolonged exposure to toluene is said not to increase the inorganic sulphate ratio of the urine, nor does it tend to lower comparably the white blood cell count. Its irritant action in the mucous membranes is stronger and acts as a warning. Toluene is used in industry similarly to benzene but to a much less degree. Its composition usually includes some benzol. It is a prime ingredient in TNT explosives, and in various dyes, perfumes and chemicals. Prevention and control follow the benzol outline above. From 53 to 200 parts per million limits have been suggested.

Ethyl-benzene or -benzol, ($C_6H_4CH_2CH_3$), has a minor industrial use, is used mainly as a lacquer diluent, in cellulose acetate silks, and as an anti-knock in motor fuel. Its boiling point is 136° Centigrade, and it is practically insoluble in water. In hazardous considerations, it is similar to benzene, and has an even better warning irritation of the eyes and air passages.

Xylene ($C_6H_4(CH_3)_2$) is also known as xylol, dimethylbenzene, and commercially represents a mixture of ortho, meta and para xylenes. It has a slightly heavier vapor, but is less volatile than the others, boiling at 139° Centigrade. It, too, is insoluble in water. Industrially, it is used in making rubber cements, varnishes, lacquers, dyes, intermediates and chemicals. It is considered slightly less dangerous than the other homologs because it is the least volatile, but its toxic action is similar, and if anything, its anesthetic effect is more rapid in severe exposures. Other considerations are similar to toluene. In each of these homologs, recovery appears to be somewhat slower than for benzol in chronic poisoning.

Solvent- or coal tar-naphtha is usually a mixture of xylene and higher homologs, distilling off at a slightly higher temperature. Toxicity is similar.

The thiophenes also distill off at temperatures between 140° and 170° Centigrade. They are frequently present with commercial benzene, resemble it to a great extent both in chemical properties and as hazards. *It is thought, however, that they center the greatest attack upon the nervous system, as do solvents such as alcohol.*

Pyridine (C_5H_5N) has nitrogen as a constituent and distills off at the same temperature range as thiophene. It is used in blending denatured alcohol, in pencil making, and in lacquering and gilding. It has not been recorded as a serious poison although it is volatile. The reason, perhaps, is that it irritates the air passages, the eyes and skin, and thus acts as its own warning signal to prevent further exposure. After removal from the hazard, any characteristically-acquired cough disappears and recovery is usually complete.

E109. NAPTHALENES NOT MAJOR HAZARDS. The hydroxy compounds of benzene like the non-chlorinated naphthalenes and phenol have a more restricted use in industry and are not considered even to approach benzol as major hazards.

The napthalenes vaporize to some extent and may cause headache, dizziness, nausea, vomiting and stupor in anesthetic action on the nervous system. When heated, and in concentrated form, the irritating effect may damage the eyes and/or cause optic neuritis. *The poisons are principally absorbed through the skin, and any skin irritations should be a warning of exposure.* Tetralin, often used as a degreaser and as a substitute for turpentine, gives off vapors, especially irritating to the air passages and the eyes. Exposure is usually accompanied by a urine discoloration of a dark-olive-green shade.

Exhaustion of vapors, general ventilation, good plant housekeeping, and especially *personal sanitation* are all measures that will prevent poisoning. Clean work-clothes, changed daily, showers, and good lunch room habits all are important. Acetic acid is often added to wash water to assist in removing the oily coal-tar compounds from the skin.

E 110. PHENOL POISONING. Phenol (C_6H_5OH) or carbolic acid, is the hydroxyl of benzol; (also called hydroxybenzene, phenyl hydrate, phenic- and phenylic acid) is a white, crystalline solid at ordinary temperatures and has a characteristic odor well-known wherever disinfecting is done. Phenol is a general protoplasmic or body-cell poison, famous as a suicide medium. In manufacture, it distills off in coal-tar distillation between 170° and 230° Centigrade; as a vapor

TECHNICAL FILE ON SOLVENTS

3.3-times as dense as air. In industrial use, being soluble in water, it is employed as a sanitary disinfectant, in making salicylic and picric acid, in making dyes and intermediates, synthetic resins and plastics, perfumes, drugs, soaps, germicidal paints. Workers exposed include:

Coal-tar workers	Paint makers
Disinfectant makers	Reclaimers (rubber)
Dye makers	Resin (synthetic) makers
Dyers	Rubber workers
Etchers	Textile printers
Explosives workers	Wood preservers

Because it is soluble in water, phenol has a strong *caustic* effect upon contact with skin, eyes, and mucous membranes. Taken internally, as by accident, it corrodes the lining of the mouth, throat and stomach. *Even mild concentrations of the vapors can cause an eczema of the skin. This should be a warning sign of exposure.*

Besides this local irritant action, phenol vapors when inhaled in sufficient concentrations act anesthetically to produce marked *acute* changes in the central nervous system with the usual symptoms of headache, dizziness, excitement, mild delirium, then stupor, paralysis of the respiratory system and death, if rescue is not prompt. Trained first aid squads are essential.

In addition, exposures over long periods to phenol absorption cause *chronic* poisoning from organic blood changes and degeneration. *Anemia, heart and kidney disease, jaundice and gangrene may result from the toxic combination that absorbed phenol makes with the body-cell protein substances.* When bandages are applied to skin exposed to phenol, gangrene may occur because the phenol cannot evaporate.

Preventive controls for phenol poisoning are similar to those cited above for the naphthalenes. No safe limits have been adopted. Medical supervision is essential for all exposures. First aid for *burns* is an alcohol skin-wash.

E 111. CRESOL, CREOSOTE COMPARED WITH PHENOL. Cresol ($CH_3C_6H_4OH$) is the hydroxyl of toluene (boiling point 191° Centigrade), and is not only distilled from coal-tar but also from pine and beech woods. It is also a white, crystalline solid at ordinary temperatures, like phenol. Mixed with liquid soap commercially, it is known as Lysol. Industrial uses are similar to those of phenol and poisoning symptoms are also practically identical. It is thought, however, that the poisoning *effects* may not be as severe.

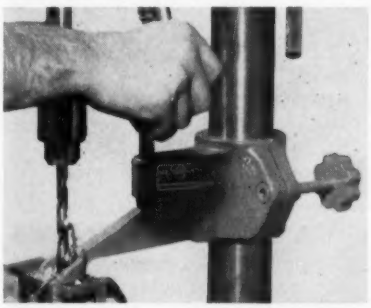
Creosote is a greenish-brown, oily liquid at ordinary temperatures, clear when warmer than 38° Centigrade, and often contains considerable amounts of naphthalene and anthracene, being distilled from wood-tar or coal-tar at anywhere from 200° to 400° Centigrade. It is used mainly as a wood preservative, a disinfectant, and in thermometers. It represents a mixture of phenols and their ethers and the poisoning properties are similar to those of phenol. Creosote, and the still residues, pitch and tar, all contain acridine which is considered to be the substance affecting exposed skin so that it becomes sensitive to light. Skin cancers are possible from such exposures.

E 112. INDUSTRIAL ANESTHETIC COMPOUNDS. The industrial alcohols, mainly methanol, ethanol, propanol and butanol; carbon disulfide; and thiophene (already cited) are the compounds whose anesthetic, poisonous effects are linked chiefly with the nervous system. *The retina of the eye seems to suffer particularly in exposures to these hazards, and vision may be disturbed or permanently obscured.* Industrial alcohols are widely used because of their excellent solvent properties and because they are not as poisonous as benzol and the chlorinated hydrocarbons. Most of the commonly-used alcohols are highly soluble in water and as a result prolonged exposures to even mild concentrations of their vapors may permit considerable accumulation of poisons within the body. In addition, following exposure, elimination from the lungs is slow. While carbon disulfide (see Index) is known as a powerful tissue-destroyer with toxic anesthetic action, it is still considered essential as a solvent in certain operations, as for example in the extraction of rubber, fats and oils from seeds and bones, the manufacture of viscose rayon, sulfur, iodine, lacquers, varnishes and insecticides.

NEW PRODUCTS

NP 1 Postive-Grip Clamp

Simple hand tightening of the M E Engineering Company's M E drill clamp provides a positive grip that eliminates dangers of work whirling with the tool or climbing the drill. No tools or wrenches are needed to



firmly hold work. Easily mounted on drill press columns without removing the head, this clamp is designed to hold jigs, fixtures, work to be drilled, reamed, countersunk or otherwise machined on the drill press.

For further information, circle NP 1 on the postage-free reply card bound into this issue.

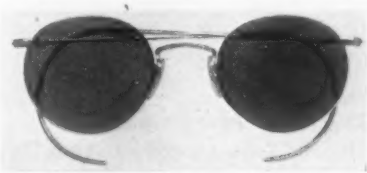
NP 2 Fatigue Pad

"Tred-Eze" is the name given to a new line of sponge rubber fatigue pads developed by The Armor-Flex Company, designed to take the discomfort out of all-day standing on hard floors. Sold in two- by ten-foot sheets, the pads come with a dried adhesive on the bottom which is activated with solvent when applied: white gasoline will do. In application, the sheet is cut to the desired size, the adhesive is "melted" with gasoline, and the pad is pressed onto the cleaned area where it will be used. Neoprene rubber pads are available for use in oily spots. Applied to concrete, steel, composition or almost any other flooring, these pads do not obstruct cleaning operations, create no tripping problem.

For further information, circle NP 2 on the postage-free reply card bound into this issue.

NP 3 Polarized Eyeglasses

A continuous layer of polarizing crystal has been built into the new Polalite eyeglasses, made by The



Polalite Corporation, to give workers the added safety feature of non-glare vision in their eyewear. Lenses in the spectacles are made of glass with a plastic interlayer much like automobile windshields. The polarized material is in the interlayer. Sold in three styles to fit large, medium or small faces, the spectacles are non-shatterable.

For further information, circle NP 3 on the postage-free reply card bound into this issue.

NP 4 Adjustable Chip Shield

A permanent magnet holds the Frank Gradischnig Company's plexiglas chip shield securely in any position on any machine with a grip so powerful that it takes the shop strong man to lift it vertically. To release the shield for different location, a thumb screw in its base is

provided to tilt the base and allow a better grip. The plexiglas shield is 7" high by 9" wide, curved to give the most protection against flying chips on all types of machinery. It comes mounted on a jointed arm which allows universal adjustment for full visibility at all times.

For further information, circle NP 4 on the postage-free reply card bound into this issue.

NP 5 Noise Level Meter

Quick pin-pointing of dangerously noisy plant areas can be accomplished by anyone with a new flashlight-size sound level meter, weighing little more than two pounds.

Sub-miniature tubes and hearing-aid batteries have been put into the meter, which meets all specs of the American Standards Association for sound level meters. Made by Hermon Hosmer Scott, Inc., the device covers the range from 34 to 140 decibels.

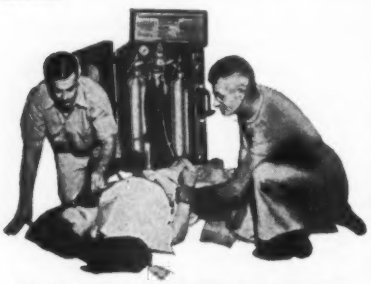
For further information, circle NP 5 on the postage-free reply card bound into this issue.

NP 6 Safe Acid Handling

The Hays Corporation is marketing two new devices to make the handling and pouring or corrosive liquids safer. Their Veriflow Meter accurately measures the flow of almost any fluid without using weigh

CAN ASPHYXIA STRIKE WORKERS IN YOUR PLANT?

Crushing accidents . . . severe electrical shock . . . heart attacks . . . heat suffocation . . . monoxide poisoning . . . smoke suffocation . . . drowning . . . and other forms of asphyxia can strike down workers in your plant no matter what you make. Industrial experience has shown that accidents involving asphyxiation can occur despite the most carefully laid safety precautions. And when a worker stops breathing, time and death will not wait for haphazard rescue efforts.



SAVE WORKERS LIVES COMBAT DISABILITY with an E & J RESUSCITATOR

YOU HAVE A RESPONSIBILITY to protect your workers from asphyxial hazards, to prevent loss of man-hours, and to minimize company liability for death or injury.

YOUR BEST PROTECTION when asphyxia strikes is the automatic resuscitation action of an E & J Resuscitator. This life-saving instrument breathes for those who are unable to breathe for themselves. Through a face mask it introduces oxygen into the victim's lungs and exhales for him. Because it automatically adjusts itself to lung capacity, the E & J Resuscitator is as safe for a baby as it is for your strongest worker. It is light and durable . . . one person can carry . . . operates on its own oxygen power . . . is easy to use. See for yourself why this safe, efficient instrument is considered essential equipment by industries, rescue squads and hospitals the country over. Send coupon below or write for a demonstration. There is no obligation to buy but you owe it to your company to see the resuscitator in action.

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NEW PRODUCTS

tanks, orifice plates or gage sticks. It indicates the rate of flow without interruption, totaling every gallon on its register. The Hays Veritrol allows you to regulate rate of flow by a simple knob adjustment. Just set the control, and acid pours out at a safe, steady rate.

For further information, circle NP 6 on the postage-free reply card bound into this issue.

NP 7 Lead Dust Respirator

Newly designed and carrying the approval of the U. S. Bureau of Mines, Pulmosan Safety Equipment Corporation's L-800 dust respirator is particularly recommended by the manufacturer for use where lead

dust is a hazard. It can also be used as protection against any dust less toxic than lead. Lightweight and compact, the respirator uses single chemically treated felt filter, cheap and easy to replace. Its patented exhaust valve is compact and positive in action. All metal parts are aluminum.

For further information, circle NP 7 on the postage-free reply card bound into this issue.

NP 8 Replaceable Air Filter

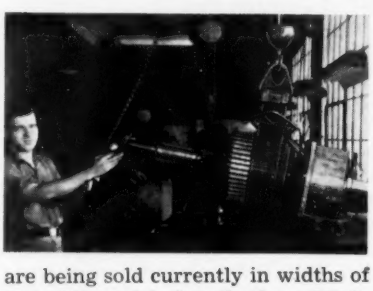
Amer-glas is a replaceable filter for use in forced warm air heating systems, "packaged" unit air conditioners and small central systems. Product of American Air Filter Co., the filtering media consist of continuous, interlaced glass filaments held in place with a thermo-plastic bond to form a thick, resilient pad. Dust-laden air passing thru the filter is channeled into fine streams, leaving dust particles behind—trapped on the adhesive coating which covers the filaments. The adhesive (Viscosine) is non-flammable. Sanitary

and odorless, it is kept in a fluid-jell state by temperatures below 150 deg. to keep it from dripping.

For further information, circle NP 8 on the postage-free reply card bound into this issue.

NP 9 Woven Wire Slings

Introduced on a test scale about a year ago, the woven wire slings made by The Cambridge Wire Cloth Company are now being produced in volume, with several new standard widths available. The slings



are being sold currently in widths of 3" to 30", and in lengths from 36" to 132". Other sizes can be supplied on special order. The slings are built of a wire mesh, made of any metal, including stainless steel. Special tempered-steel handles attached to both ends of the sling permit use of either a choke or basket hitch around the material being handled.

For further information, circle NP 9 on the postage-free reply card bound into this issue.

NP 10 Diathermy Units

Short-Wave Diathermy treatments are being used more and more in industrial first aid rooms to relieve the pain of sprains and strains, to promote healing of fractures and to ease the discomfort of arthritis, lumbago and other forms of rheumatism. Three new models of low-cost diathermy units have been made available by the William D. New Company: Porfable Model E, Standard Model E20 and Deluxe Model E30. Designed especially for industrial dispensary use, the units come equipped with a complete complement of pads and accessories.

For further information, circle NP 10 on the postage-free reply card bound into this issue.

NP 11 Decorated Dixies

Dixie Cup Company is now putting out seven-ounce cold drink vending Dixies with a new series of safety designs. Dixie's safety designs, already available in six-ounce hot

drink cups, offer one more medium of getting the safety message across in an easy, unusual way. Used in plant cafeterias, at snack carts, and vending machines, they serve as safety promotion pieces with a valuable novelty appeal.

For further information, circle NP 11 on the postage-free reply card bound into this issue.

NP 12 Load Binders

Injuries resulting from failure of load binders, many times the result of spreading of the clevis or breaking hooks, can be guarded against by the use of new tension-pull continuous load binders made by The Canton Cast Products Company. The Canton binders are made of a durable alloy, with drop forged hooks which are attached to 360 swivels on both tongue and clevis. The puller's clevis design and construction positively eliminate spreading or release in any way while in operation, according to the manufacturer.

For further information, circle NP 12 on the postage-free reply card bound into this issue.

NP 13 Extinguisher

Checking for dangerous clogging in the discharge elbow of two new fire extinguishers made by Stop-Fire, Inc., is a snap. A safety port has been built into these extinguishers, making it possible to remove the discharge elbow for quick, easy inspection. Improved projecting inner screens on both models offer much more non-clogging surface than flat screens formerly used, Stop-Fire says. The new extinguishers are the SA-50-500 soda-acid, and FM-51-500 foam 2½ gallon.

For further information, circle NP 13 on the postage-free reply card bound into this issue.

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QUIK-LABEL Pipe Markers conform to American Standards Association Pipe Identification System. QUIK-LABELS come on handy cards . . . stick without moistening. Names of materials printed in large black letters on correct ASA background colors. CAN BE READ UP TO 75 FEET. Markers for over 140 materials, **including all materials listed in ASA Standard A13,** available on Brady Stock Cards. Specials made to your order. QUIK-LABEL Pipe Markers are Silicone Plastic coated to resist dirt, grease, fumes, moisture . . . indoors or out. Replace slow and costly painting and hand stenciling. Exclusive Starter-Strip automatically releases part of label for fast peeling. QUIK-LABELS mark your pipes so that anyone who can read will know what's in them. **QUIK-LABELS leave no room for doubt . . . or tragedy.** Write for useful literature and FREE SAMPLES today.

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. . . And Sudden Injury

Severed at the waist by sudden movement of freight cars under which the victim was working, the upper body of a yard worker lies beneath a gondola car.

— And Sudden Injury

THE SHAPELESS bundle under the hopper in the photo is the top half of a man. The rest of him lies about ten feet down the track.

This experienced railroader figured the easiest way to get at a switch he had to set would be by crawling beneath a string of sided cars. He had just started under them when a locomotive he hadn't counted on came pounding down the siding, slamming the sided cars together and snipping him in half.

Photos such as this are dramatic examples of what can happen when a man takes dangerous shortcuts.

We expect an unhappy letter or two from readers about this photo: since the first "And Sudden Injury" feature appeared—in October, 1946—we have received occasional letters, asking, "why run stuff like that? It's bad taste; and, as far as I can see, it doesn't do any good." But we feel strongly that delicacy must take a back seat to the urgent need for putting across a safety message. These photos are shockers: *they're supposed to be.*

Some men have to be startled into being safety-conscious. One life saved is worth a number of injured sensibilities to us—and to you, we are sure. That they do their job is proved daily by letters from safety men who use "And Sudden Injury" photos on their bulletin boards and want all they can get from our back files.

This photo was sent to us by W. J. Camper, Safety Director of Lima-Hamilton Corp. The accident didn't occur in his company. His letter with the picture said, ". . . don't let anyone talk you out of publishing it, even though it is gruesome; because it certainly makes us all stop and think."

It certainly should. What do you think? We'd like to hear your ideas on the subject.

Requests for tear sheets of "And Sudden Injury" regularly outstrip our supply. Therefore, starting with this month's feature, quantity reprints will be made available for plants wishing to distribute them to workers. The cost is $24 for 500, $28 for 1,000 and $34 for 2,000. Orders must be made by the first of the month following publication to OH's Reader Service Bureau.

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A well-planned orderly factory is a distinct asset to any firm. Start by striping all factory aisles, storage areas, safety zones, etc. An M-B Marker simplifies the job. It lays down clean-cut lines, quickly and easily. Paves the way for safe traffic through plant . . . reduces accident hazards . . . adds to plant efficiency. Convertible to all purpose paint sprayer. Write for literature.

MODEL 5-P
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Works close to walls and around obstructions. Can be used as portable paint sprayer.

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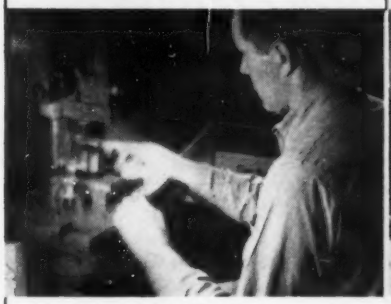

CORRECTED VISION CAN MAKE THE WORK LOOK LIKE THIS

How to get up to 37% Better Production
without adding a man or a machine!

Best estimates indicate one out of three workers needs eyecare and that 40% to 60% of goggle wearers need *corrective* as well as *protective* lenses. One manufacturer reports that 9 out of 10 workers increase production when vision is corrected—with spoilage decreased 37%*. Read how better worker vision pays dividends too in fewer accidents, less absenteeism, better morale — write for AO's booklet which shows how much can be saved by a visual correction program — and how it can be done. Address Dept. CP-07.

*Name on request

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WITH COMPLETE SAFETY

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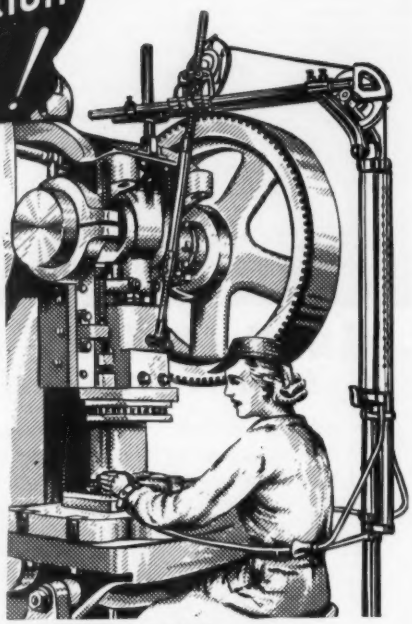
Gives operator confidence. Allows him to feed to dies as fast as he can operate foot treadle.

Ram connection attached below any possible breaking point. If, for any reason, the press repeats, the hands will be drawn to safety.

There is a plant near you where it may be seen in actual operation. **Write today for complete Catalog and names of users in your area.**



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HOW TO MAKE FIRE HOSE LAST

continued from page 13

moving part of the cover to apply couplings is not good practice, as this lays the tube open to deterioration and allows a localized flexing point to develop at the edge of the reduced diameter section. Using a temporary lubricant—rubber cement or thick soap solution—will make the insertion of coupling shanks easier. *Never use oil, grease or paint as a lubricant on rubber.* When coupling fire hose for high pressure, the clamps should be drawn up a second time 12 to 24 hours after the original joining, due to a tendency of the clamping pressure to ease.

Temperature extremes and acid are hose killers

Excessive heat weakens hose. Scorches cannot be removed: best bet is to cut out scorched pieces and recouple the untouched portions. Frozen hose should be handled as little as possible, and then very gingerly. Thaw it out thoroughly before attempting any straightening.

Acid damage is easy to distinguish from a cut, using blue litmus paper moistened with distilled water. If the wet paper turns red when it's laid over the injured spot, acid did the damage. Acid on the jacket surface can be neutralized by soaking the damaged spot in water containing washing soda. If the acid has gone through the jacket, the bad portion should be replaced. Oil or grease on the jacket should be wiped off with a dry cloth. A special, rubber-coated hose is made for plants in which there is a lot of acids handling or processing. The thin rubber layer protects hose from acid attack.

Take Special Care In Drying and Storing Hose

One of the most carefully supervised phases of a plant fire drill should be the drying and storage of hose after use.

Before wet hose is stored it should be properly dried under carefully controlled conditions. There are three common drying methods: drying racks; drying towers; circulated warm-air ovens. A drying rack is probably the least desirable of the three methods, especially in the drying of cotton-jacketed hose, since it

HOSE DRYING is done quickly and with minimum harm to hose jackets in this circulated warm-air chamber. Air heated to 85 deg. is blown up through the hose, drying as it goes and expelling moisture through chamber roof. After drying, hose should be rolled up and stacked horizontally, placed so that air can circulate through it.

Circul-Air Corp.

calls for more bending of the hose than the other methods. If racking is done, do it with as few folds as possible. Position of the hose should be changed at least every three months, to shift the strain on the fold points.

Every six months, water should be run through the hose to wet the lining: wetting the tube lubricates it, retards oxidation. Each time the hose is used, it should be drained thoroughly. The cotton jacket must be dried to prevent mildew.

One of the newer ways of drying fire hose is the circulated warm-air method. Using this system, the hose is placed on racks in an enclosed chamber, and air that has been heated to about 85° is blown up through the chamber, expelling moisture through the chamber roof. Baffles between heaters and hose chamber prevent radiant heat damage. Because drying towers are expensive to build and keep up, and often become catch-alls, the circulated air technique appears to be the best drying method of the three.

When the hose is put away after drying, it should be rolled up and stacked horizontally. Spare hose should be placed in storage in a way that will allow air to circulate around it: never store it in contact with damp walls or floors. Termites tear hose apart in a hurry—if you suspect their presence, move the hose to a safe spot.

Keep These General Hints in Mind

Keep hose away from acids and oils as much as possible. When hose is laid on the ground, protect it from trucks or heavy objects. Don't drag it over rough surfaces unnecessarily.

Pressure-test fire hose regularly. Longtime storing can cause serious damage: periodic testing is the only way of finding out before it's too late whether the hose is in fighting shape.

HANDLING HANDICAPS? handle them better with HOOD gloves!

Many are the dangers to which employees' *vital* hands can be exposed in the course of a day while handling shipping crates, or when working with chemicals, oils, acids, etc.

Shown here are just two of the many types of Hood Industrial Gloves available to help rid you of any handicaps in these various handling operations . . . gloves backed by the combined and continuing efforts of experienced chemists, engineers and technicians using the most modern equipment and techniques available.

Let the *proof* of "on the job" testing of Hood Industrial Gloves handle your protection problems from now on. Our catalog will show you the complete line of Neoprene, Rubber or Plastic coated gloves for *every* type of industry.

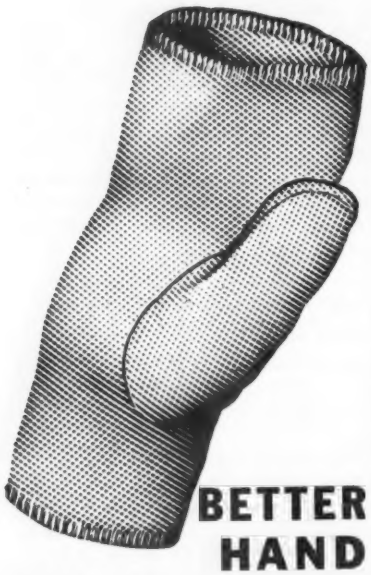
HOOD for NEW Safety PLUS

MODEL #4703
—Full Neoprene coated, knit wrist style . . . liquid proof . . . curved fingers . . . no seams on working surface . . . for all industry.

MODEL #7702
—Full Neoprene coated industrial weight 14½" gauntlet. 6" cuff . . . liquid proof . . . curved fingers . . . for all general industry.

HOOD RUBBER CO. Watertown, Mass.

"WOVEN-Gards"



BETTER HAND PROTECTION
at amazing low cost

"Woven-Gards" are hand protectors, mitts, pads and sleeves made of a new safety material. They provide flexibility, comfort, resistance to abrasion and cutting far beyond that of anything used before. They are extremely oil-absorbent and do an excellent job when handling oily, slippery sheets. The porous weave makes them one of the finest protectors for handling lower temperatures. Enthusiastic users say they have never seen values like "Woven-Gards." Excellent protection at lowest cost. Send now for descriptive folder and prices.

Industrial Gloves Co.
1814 Garfield St., Danville, Ill.
(In Canada: Safety Supply Co., Toronto)

INDUSTRIAL Safety Apparel TRADE-MARK

EVERY EMPLOYEE A FIREMAN

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attached to the extinguisher. A duplicate record is kept in our master files.

Brigade applicants are carefully screened

Ansul's fire brigade is well established by now. Our only personnel problem is an occasional replacement. When that time comes, the fire safety committee meets to select a new man. These are the qualifications we consider of prime importance:

- Physical fitness
- Mental alertness
- Availability (does candidate always work at same job—same location?)
- Interest — enthusiasm for fire fighting.

There has never been a scarcity of men who meet the above qualifications, even though there's no financial reward for serving on the brigade. In fact, there's a substantial waiting list.

The work of our brigade is effectively augmented by the rescue squad, a 15-man body that answers all fire calls along with the brigade. The rescue squad had the responsibility of administering first-aid to fire victims. Its members are trained to fight fires, too, and can be pressed into service if necessary.

Fire protection usually awaits a tragic stimulus

Plant fire protection generally stumbles along until something happens that makes everybody fire conscious. This was true at Ansul. A number of years ago, when we were newcomers in making dry chemical fire equipment, one of our men tried to use a dry chemical fire extinguisher on a small oil blaze. He picked up the extinguisher, *turned it upside down* and started to fight the fire! Naturally, no dry chemical. Just a blast of air.

That was one incident, here's another. Not long after this, an electrical motor caught fire. An employee standing nearby grabbed a bucket of water from a fire barrel. He was all set to throw it on the electrical fire when a fellow employee lunged for him, knocked him off balance and held his throw. This quick action may easily have saved the man from electrocution.

After witnessing a few emergencies like this, management decided it was high time our plant employees learned some basic facts about fire. The company began a drive for better fire safety at Ansul, and the 35-man brigade of today is the result.

An observer might hastily say, "Why, this program has cost you a lot of money." This remark would be only half right. Yes, our fire safety program does cost us money in one sense. All our fire training, all our fire drills, all our fire brigade meetings are held on company time. If the meetings cut into the men's leisure hours, they receive time-and-a-half pay. In addition to that, we have many thousands of dollars tied up in fire equipment.

But we're convinced that intensive fire safety pays off. Our losses—less than $500 in 15 years—are not an accident. By judicious use of time, money, manpower and equipment, we have made fire our servant. We're doing our best to see that it never becomes our master.

Gas Mask Identification

For Quick Gas Mask Spotting, an identification color code (K 13.1-1950) has been adopted by the American Standards Association. Canisters will be painted for quick recognition, depending on the contaminants against which they are to be used. White marks masks for acid gases; *white with ½" green stripe*—hydrocyanic acid gases; *white with ½" yellow stripe*—chlorine; black — organic vapors; *green*—ammonia; *blue*—carbon monoxide; *½" contrasting black or white stripe*—dusts, fumes, etc. in combination with above; *yellow* — acids and organic vapors; *brown*—acids, organic vapors and ammonia; *red*—all of the above. Lettering, stating the contaminant(s) for which the mask is intended is to appear on canisters.

CANDY IS DANDY

continued from page 21

members of the Foremen's Club Safety Committee.

Safety reminders distributed

A second project which is proving successful in getting safety reminders into the hands (and minds) of workers on the job is the distribution of safety instruction cards. Twice a month, each department foreman receives cards with safety reminders covering a single subject. While distributing them, he has an opportunity to contact all workers, check their safety equipment and work practices.

A personal safety contact reminder card is kept for each worker: recorded items include date of contact, man's reaction, whether or not safety shoes are worn, individuals accident record. Typical semi-monthly reminders explain how to protect eyesight, the frequency of falling accidents and how to avoid them, instructions for safe use of knives and shears.

Safety Director T. J. Cain feels that Goodrich's constant safety goal, reducing the past year's injury total by one-half, can best be achieved in 1950 by extending the award and personal contact principle to every worker. Continuing emphasis on individual approach is expected to bolster worker interest, and put the company's 80th year safety campaign over the top.

Stanzoil Light Weight RSW-13's

Tough, Sheer... Sure Grip on Oily Parts

These new improved light weight Stanzoil RSW-13's are designed especially for handling small parts in testing and assembly, food products packing, etc. Shaped to fit the fingers naturally in gripping position, more hand comfort over long periods of wear. Finger tip gauge cut to .018 for greater sensitivity. Non-slip grip aids precision workers, speeds action. Your plant shows more productivity when employees aren't fumbling with thick, unwieldy rubber gloves. Write today for complete *Stanzoil* catalog.

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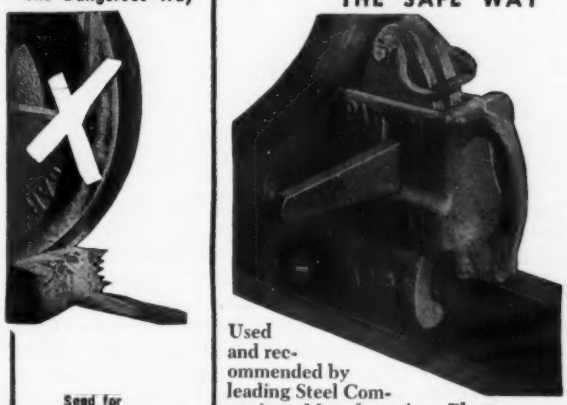
Used for car stops, on loading platforms, temporary sidings, cars on grades and traveling cranes.

THIS The Dangerous Way OR THIS THE SAFE WAY



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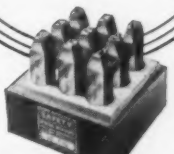

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- No Mushroom
- More Service
- Thumb Side Marks for easy identification

M.E. CUNNINGHAM CO.

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60% more visibility ..... protection with new STANLEY "Flud-lite" eye shield

When workers see better, know they're fully protected . . . they do a better job. New, larger Stanley No. 630 "Flud-Lite" Eye Shields give 60% more visibility and protection. Full 6" x 10" window . . . safety glass above, ordinary glass below is adjustable to worker's convenience. Cannot be moved to off-guard position without dismantling. Available for 115 and 220 volts. See your dealer or write for folder showing two sizes of "Flud-Lite" Eye Shields. Stanley Electric Tools, 560 Myrtle St., New Britain, Connecticut.

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INDUSTRIAL EXHAUST SYSTEMS

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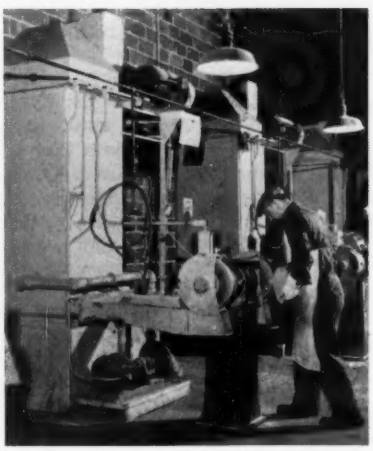

FIRE HAZARD makes collection of magnesium dust by wet unit necessary. Unit systems are used on this battery of magnesium alloy buffing wheels to collect the explosive dust, convey it in sludge form to a tank for disposal. The collector is a scrubber type.

Peters-Dalton, Inc.

changes of direction. At each change, it strikes wetted impingement plates: particles caught on the plates are washed away by the flow of water. Collectors of this type convert dust into sludge which is either channeled to a dump, or—unless inexpensive water supply and suitable disposal are available—settled out in a dewatering tank and the water recirculated through the collector. As a rule, 3 to 6 gallons of water per minute are required for each 1,000 cubic feet of air handled by the unit.

Spray type collectors. Largely used for fume and vapor removal, the spray collector draws the air through one or more sprays at velocities of under 1,000 feet per minute. Nozzles, rotors or the velocity of the water are utilized to produce the spray pattern. An adaptation of this collection method picks up the water in an air stream of more than 2,500 feet per minute and drops out the contaminants with a sudden change of direction.

Dynamic collectors. A spray of water is introduced into the air stream just before it reaches the fan, which, like the dry dynamic precipitator, is an integral part of the collector. Fan blades are modified to handle wetted particles, acting as impingement surfaces. The dust is sent, as a sludge, to a secondary circuit and leaves the collector at a different point than the cleaned air.

Static washers. These units are designed to handle heavy dust concentrations. Air is subjected to the combined action of centrifugal force (through several changes of direction) and washing (through a curtain of water). A hopper-bottom tank receives the sludge thus formed, and the water remains in the tank.

Orifice type collectors. These units may be more accurately termed *agglomerators,* rather than *collectors,* since they are usually followed by a cyclone or other collector. In them, small dust particles are met by water in a restricted passage, forming larger, wetted particles which are more readily separated by lower efficiency units. The agglomeration of fine dust into larger particles for easier separation has also been achieved by sound waves, although *sonic agglomerators* are not frequently used.

Electrical Precipitators

The fact that particles can be given an electric charge and will then be attracted to opposite charged electrodes is the basis of the Cottrell precipitator, long used as a method of fly ash. This principle is used in dust precipitation as well: contaminated air is passed through a high-tension electric field which ionizes the dust particles and precipitates them, usually in a single operation. Removal of the collected solids is then accomplished by scraping or shaking the electrodes to release that portion which has not dropped to the container. Equally capable of fumes and larger particles, the elec-

trostatic precipitator is the most effective type of separator: its high cost and relatively large space requirements, however, limit its application. Principle uses are in high temperatures and for collection of extremely small particles.

Unit Systems

The compactness and mobility of unit exhaust systems make them valuable in production involving changing processes or temporary work conditions. They are completely self-contained, incorporating collector, power supply and fan receptacle for the collected refuse. Centrifugal and other collector types are utilized, usually incorporating cloth bag or viscous screen filters as after-cleaners for improved efficiency. In addition to small space requirements and adaptability to production line changes, such units offer versatility in disposal of cleaned air: when recirculation of the air is not desirable, it can be vented to the outside.

Fabric Collectors

With the exception of electrical precipitators, the several types of cloth collectors are the most efficient units for separation of small contaminant particles. Dusts as small as ½ micron can be trapped, making cloth collectors well suited to recovery of valuable residues.

Two types of cloth collector are in common use: the *tube* type, in which air is pulled or blown upwards through long vertical tubes that are closed at the top: and the *screen* type, which passes the air through rather flat envelopes. Dust is collected on the inside of the tubes and on the outer surfaces of the envelopes or screens. While cotton cloth is most frequently used as the filtering medium, wool, glass and asbestos are also employed.

Cloth collector efficiency depends largely on the amount of dust deposited on the filter surfaces. Resistance is greatest when the unit has been in operation for some time, least when it has just been cleaned: regular maintenance attention, usually at least once a day, is therefore imperative to assure satisfactory service from these systems. Shaking devices, attached to the top of tubes, are provided to release dust accumulations and drop them into hoppers at the bottom of the collector, while similar shaking or rapping mechanisms keep screen type collectors in effective operation.

In applications where short periodic shut-downs for cleaning are not possible, *continuous type* cloth collectors may be used. They consist of two or more compartments, each with individual shaking mechanisms and controls for isolating one chamber at a time.

Since filter cloth condition governs the efficiency of these collectors, care must be taken to apply them within their limitations. Heat, moisture and chemical characteristics of refuse to be handled are the main considerations in this respect. Top operating temperature for cotton filters is about 175 deg. F., while use of wool extends this limit to 200 deg. Cloth filters are practical only where air is above the dew point, to prevent condensation and clogging. Periodic impregnation with fire retardant compounds protects cloth from sparks or other combustibles carried through the collector. Wire spark screens can be installed to prevent such materials from reaching the filters.

Wearing of the tubes and screens is greatly affected by the velocity of air through the cloth: recommended maximum (by the American Foundrymen's Association) is 3½ feet

Because it's BLAW-KNOX "TWISTED BAR" Electroforged Steel Grating

Blaw-Knox Stair Treads available with rolled diamond checker plate nosing, twisted cross-bar nosing or abrasive nosing.

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OTHER ADVANTAGES: Maximum open area for light and air. Self-cleaning, easy to maintain, economical to install.

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"THE SAFETY DIRECTOR"

Flashing display is a constant warning to employees to avoid accidents. Changeable letters permit timely safety messages to be set up as often as required. Definite improvement in safety records has been noted in plants using "The Safety Director."

Write for complete information regarding DAV-SON — Cork Bulletin Boards and Directories and the famous "Safety Director."

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At last—a resilient, long-wearing coating of good gloss and *maximum slip resistance*. NO-SLIP, a new but thoroughly tested floor coating, provides a safe, lustrous surface. It is easy to apply, can be maintained inexpensively. (Co-efficient of friction rating 0.90 on linoleum and asphalt tile . . . by Underwriters' Laboratories Re-examination Service.)

Write for free demonstration kit and literature.

TIME-SAVING SPECIALTIES
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MINNEAPOLIS, MINNESOTA

Distributors Wanted

per minute per square foot of cloth area. This should be reduced to 3 or less f.p.m. when heavy concentrations of dust are handled. Use of a centrifugal collector as a pre-cleaner is often advisable in order to maintain peak efficiency of the cloth unit by reducing the dust load on the arrester.

E. MAKE-UP AIR AND RECIRCULATION

When large amounts of air are removed from a building in order to separate dust and other hazards, it must obviously be replaced with clean, tempered air. The American Foundrymen's Association sets 6 times the cubical contents of the work area as the maximum volume of air exhausted before provisions must be made for make-up air. Ideally, this is achieved by bringing fresh air into the building, (heating it to desired temperatures in winter), and releasing it in the vicinity of the exhaust system intake so that no disturbing drafts are created. Filters are often required since industrial areas rarely provide sufficiently clean air.

The practice of recirculating air discharged by the collectors is of questionable value, and is prohibited in some state codes under certain circumstances. The main value of this arrangement is the retention of heat in cold weather: however, it has been found that, in some cases, it actually proves less expensive to heat fresh air than to provide ductwork and blowers for proper recirculation of cleaned air. *Recirculation should not be attempted if the contaminants exhausted are materials with which health hazards are associated.* While the recirculation of exhaust air *may* be harmless in the case of some contaminants which are nuisances, rather than hazards, it should be attempted only after careful study of its contents and a constant check to assure that it is well within safe standards.

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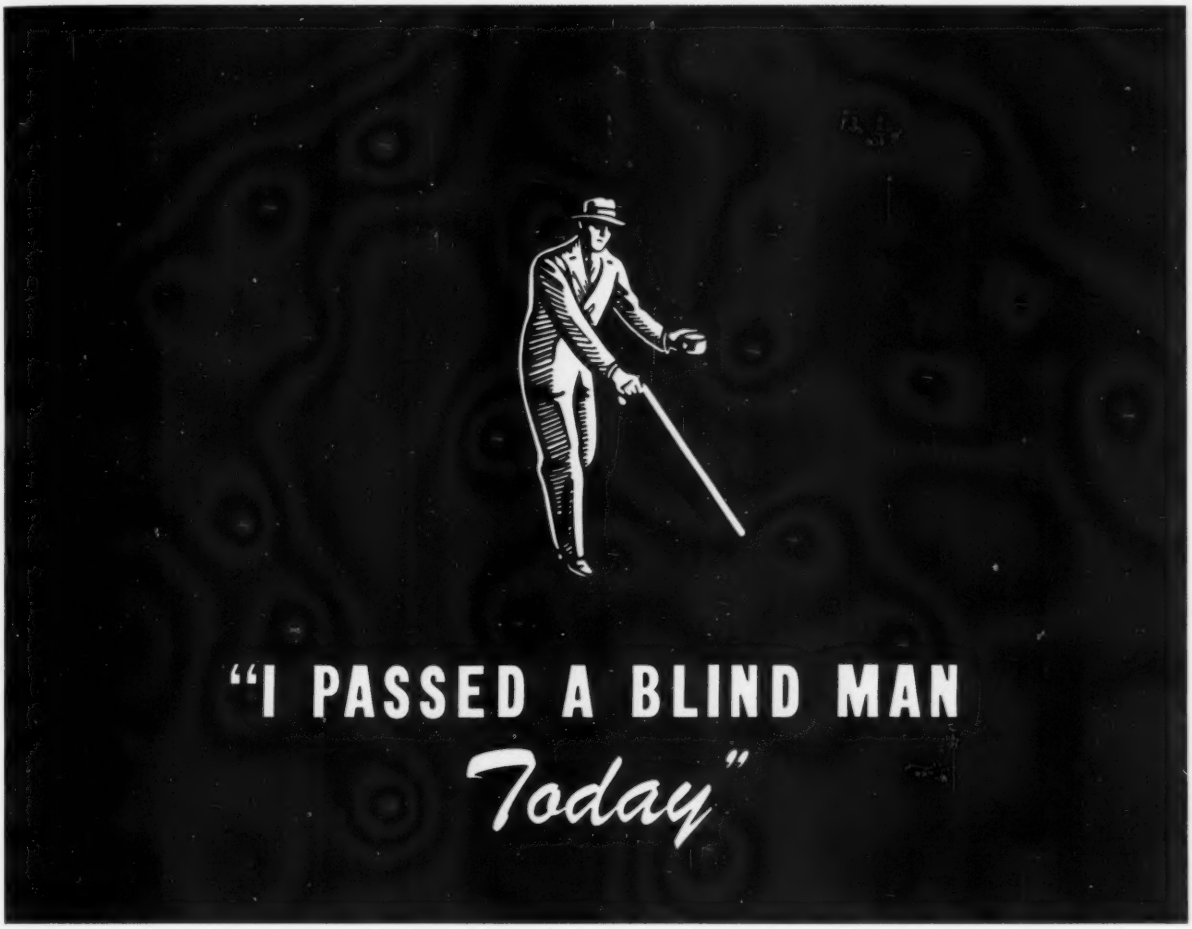

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1 SELL EYE SAFETY TO EMPLOYEES
Ask your distributor's representative to show you the kit of posters, pay envelope inserts, PA system scripts and other material that sells workers forcefully on *desire to use* proper safety eyewear.

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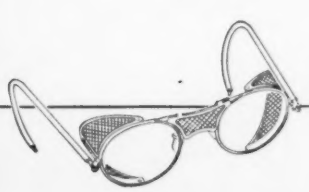
"I Passed a Blind Man" is available now in a forcefully written pamphlet for pay envelope or other distribution—a tiny part of the *total* eye safety service performed by Bausch & Lomb for all firms interested in a *total* eye safety program. Write Bausch & Lomb Optical Company, 745-TSt. Paul St., Rochester 2, N. Y.



BAUSCH & LOMB *Safety Eyewear*

What is so right about this picture?

IS IT THAT Dad's finally retired . . . the old alarm clock gagged for good?

Is it because now Mom won't have to watch him leave for the office any more, looking just a little bit tired?

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